PROCEEDINGS

OF THE

MADRAS GOVERNMENT

IN THE

PUBLIC WORKS DEPARTMENT,

IRRIGATION BRANCH,

FOR THE

MONTH OF JUNE 1893.

Printed by Authority.

MADRAS:
PRINTED BY THE SUPERINTENDENT, GOVERNMENT PRESS.

1893.

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GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

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1 Subjects.	2 Numbers and Dates of Proceedings.	3 Date of Report to Secretary of State for India.	4 Numbers and Dates of previous Proceedings.
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GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From A. A. G. MALET, Esq., Officiating Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezwada, 15th May 1893, No. 411 K.S.

I have the honour to forward, for your approval and sanction of Government under Revenue Account, estimate, amounting to Rs. 2,530, on account of tools purchased for the use of Kistna Eastern Division during 1891-92, and to request that you will be so good as to obtain the sanction of Government.

2. The Executive Engineer, Kistna Eastern Division, explains the necessity for the outlay being incurred in the absence of a sanctioned estimate as being due to most of the articles in the estimate having been obtained from England through the General Superintendent of Public Works Stores, and their value could not be ascertained until the debit advices have been received from him, and that the necessity for obtaining sanction to the estimate under reference was lost sight of.

Order—dated 1st June 1893, No. 481 I., Public Works.

It is not necessary that the estimate forwarded with the foregoing letter from the Superintending Engineer, II Circle, should be sanctioned now. The Examiner of Public Works Accounts is authorized to pass the expenditure actually incurred without a sanctioned estimate in purchasing tools required for the use of the Kistna Eastern Division during 1891-92.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, II Circle.
„ Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 1st.

Recd. *Encl.*

G.O., 1st June 1893, No. 481 I.

JUNE.

Tools

The Examiner authorized to pass the expenditure actually incurred in purchasing — required for the use of the Kistna Eastern Division during 1891-92.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From J. C. LARMINIE, Esq., Superintending Engineer, V Circle, to the Chief Engineer for Irrigation, dated Chepâk, 13th May 1893, No. 147 E.I.

The Executive Engineer, South Arcot, has forwarded, for my countersignature, the enclosed award statement for Rs. 121-10-9, being interest due to two individuals who were compensated for lands submerged in the waterspread of the Nagarappadi tank, Pelandorai anicut system, as per copy of Collector's No. 274/Eng. of 13th March 1893, herewith, for information.

2. The estimate of Rs. 9,167 approved in G.O., No. 474 I., dated 10th May 1884, for compensation for lands required for the Pelandorai anicut system was closed and completion report sent to Examiner in April 1892 with a saving of Rs. 377-15-2, the outlay against the estimate being Rs. 8,789-0-10.

3. I have, therefore, the honour to request that a sum of Rs. 122 may be allotted to meet the payment of the award statement.

Order—dated 1st June 1893, No. 483 I., Public Works.

The payment of Rs. 122 due for interest on the amount of compensation for lands submerged in the waterspread of the Nagarappadi tank is authorized. This amount will be included in the schedule of works called for in G.O., No. 329 I., dated 13th April 1893, the submission of which, accompanied by the report and index map of the Pelandorai anicut system, required by the Government of India should be expedited by the Superintending Engineer.

2. To meet the above payment, the following transfer of funds is sanctioned :—

Irrigation.
43. Minor Works and Navigation.
Minor Works for which Capital and Revenue Accounts are kept.
Pelandorai Anicut System.
South Arcot Division.

From Revenue Account.	RS.	*To* Capital Account.	RS.
Extensions and improvements, minor ...	99	Compensation for land	122
Establishment	23		
Total ...	122	Total ...	122

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, V Circle, with one enclosure.
" Examiner, Public Works Accounts.
" Revenue Department.
Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 1st.

Recd. *Encl.*

G.O., 1st June 1893, No. 483 I.

JUNE.

Nagarappadi Tank

The payment of Rs. 122 due for interest on the amount of compensation for lands submerged in the waterspread of the —, Pelandorai anicut system, authorized, and to meet the above payment certain transfer of funds sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

No. 495.

General report to accompany plan and estimate for constructing three culverts below Kidari hill at the sites, the mileages of which are 33 miles 3 furlongs and 0 feet, 33 miles 3 furlongs and 600 feet, and 33 miles 4 furlongs and 320 feet, respectively.

These works, since they are situated in the new line of the eleventh reach, can hardly be said to be substituted for any in the original line. However, for the sake of comparison, let them be supposed to be substituted for an inlet and outlet.

Amount of original estimate is Rs. 12,480, viz :—

	RS.
One inlet on plan No. 57	4,200
„ outlet „ „ 58	8,280

Amount of revised estimate as per accompanying plans—

	RS.
No. 1 on sheet No. 1	1,210
„ 2 „ „ 2	1,110
„ 3 „ „ 3	1,320
Total ...	3,640
Saving ...	8,840

These culverts are proposed to be built to pass the water draining down the almost perpendicular face of the Kidari hill, along the base of which the main channel runs. The ground is very much cut up with small streams and it is therefore proposed to concentrate these and to pass the drainage by means of three culverts which are to be built at the mileages specified above. Three culverts are proposed as it is considered unsafe to pass the whole drainage at one point since the fall of the ground is so great and the channel being immediately below the hill.

As regards the details of the work, it is difficult or rather impossible to ascertain the actual drainage; * however, from careful inspection, the size of vent provided in each case is considered ample.

* The information as regards the drainage area and vent is entered in each of the plans.

The savings of Rs. 8,840 effected by the revision of the estimate should be added to the provision for unforeseen works.

Camp Kallandri,
28th March 1893.

(Signed) G. P. CARLESS,
Executive Engineer.

No. 59 P.R.

Copy, together with the estimates and plans, is submitted to the Chief Engineer, Public Works Department, for approval and sanction.

2. The plans have been examined. The rates are considered reasonable.

Trichinopoly,
17th May 1893.

(Signed) W. HUGHES,
Suptg. Engr., VI Circle.

Order—dated 1st June 1893, No. 484 I., Public Works.

The following estimates are sanctioned in lieu of the provision of Rs. 12,480 made for an inlet and outlet in the eleventh reach of the Periyár main channel in the sanctioned estimate for the Periyár project, the saving of Rs. 8,840 effected by the present estimates being added to the amount available for unforeseen works, which will then be increased to Rs. 40,741:—

Capital Expenditure not charged to Revenue.
49. Irrigation.
Periyár Project.
I. Works.
2. Main Canals and Branches.
Main Channel, Eleventh Reach.
6. Other Cross Drainage Works.

		RS.
1. Culvert at 33 miles 3 furlongs 0 feet	... ...	1,210
2. " 33 " 3 " 600 "	... ...	1,110
3. " 33 " 4 " 320 "	... ...	1,320
	Total ...	3,640

2. This sanction is registered as No. 55 I. of 1893-94.

(True Extract.)

(Signed) J. HANNAN,
Ag. Joint Secy. to Govt., P.W.D.,
General, Buildings and Roads Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle,
with plans and estimates (10).
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUONT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 1st.

Recd. *Encl.*

G.O., 1st June 1893, No. 484 I.

JUNE.

Culverts

Estimates, aggregating to Rs. 3,640, for constructing three — in the eleventh reach, Periyár main channel, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following papers :—

Office-note to the Examiner, Public Works Accounts, dated 10th May 1893, No. 109.
" from " " " " 15th " " " 1691 C.

No. 80 I.

Note by the Chief Engineer for Irrigation.

In G.O., No. 1012 I., dated 30th November 1892, an estimate, amounting to Rs. 3,850, for providing a jib crane to lift the falling shutters of the Uppar Odai dam, Korampallam tank, Srívaikuntam anicut system, was sanctioned under "42. Major Works (Working Expenses)," "Extensions and Improvements." This sanction was cancelled in G.O., No. 248 I., dated 22nd March 1893, with reference to the instructions of the Government of India that estimates for "new works" exceeding Rs. 1,000 should be charged to the "Capital Account." With his letter No. 90 T.N., dated 3rd instant, the Superintending Engineer, VI Circle, has resubmitted the estimate for sanction under rule V, para. 156, chapter XV, of the Government of India Public Works Code.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

Ootacamund,
19th May 1893.

To the Secretary to Government,
Public Works Department, Irrigation Branch.

Order—dated 1st June 1893, No. 486 I., Public Works.

The following estimate is sanctioned :—

Capital Expenditure not charged to Revenue.
49. Irrigation.
Srívaikuntam Anicut System.
2. Main Canals and Branches.
14. Tanks and Reservoirs.
Korampallam Tank.

	RS.
I. Works—	
Jib crane to lift falling shutters of Uppar Odai dam	3,850
II. Establishment	886
III. Tools and plant	64
Total estimate ...	4,800

2. This sanction is registered as No. 56 I. of 1893–94 and will remain current till the end of the current year.

3. To meet the outlay on the above work the following transfers of funds are sanctioned :—

Capital Expenditure not charged to Revenue.

From Kistna Delta System. Eastern Section.	RS.	*To* Srívaikuntam Anicut System. Korampallam Tank. Tinnevelly Division.	RS.
Works estimated to cost Rs. 2,500 or less, item No. 61, Part II, of Major Works budget, final issue ...	3,902	Jib crane to lift falling shutters of Uppar Odai dam	3,850
Establishment	898	Establishment	886
		Tools and plant	64
Total ...	4,800	Total ...	4,800

4. Ordered that a copy of these Proceedings be forwarded to the Government of India for information.

[Here enter No. 487 I., Public Works, dated 1st June 1893.]

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle,
with plans and estimates (5).
" " " II Circle.
" Examiner, Public Works Accounts.
" Revenue Department.
Editors' Table.

Endorsement—dated 1st June 1893, No. 487 I., Public Works.

Forwarded.

(By Order.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 1st.

Recd. *Encl.*

G.O., 1st June 1893, Nos. 486 I., 487 I.

JUNE.

Jib Crane to lift Falling Shutters of Uppar Odai Dam, Korampallam Tank

Forwarding copy of Proceedings sanctioning an estimate of Rs. 4,800 for providing a —, Srívaikuntam anicut system, funds being provided by transfer from other works.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From A. A. G. MALET, Esq., Officiating Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezwada, 20th April 1893, No. 212 K.S.

I have the honour to forward, herewith, for your approval and sanction of Government, plans and estimates, amounting to Rs. 10,800, for excavating Gogunta channel of Ellore canal, and to request that you will be so good as to sanction the amount from the balance available with the Government for unforeseen works of the Kistna delta system.

2. In G.O., No. 897 I., dated 21st November 1891, the provision of Rs. 4,800 allowed for Gogunta channel in G.O., No. 577 I., dated 1st October 1888, has been absorbed for the excavation of Kakulapad channel, but from the report, which accompanies the estimate, it is reported by the Executive Engineer that the excavation of this channel is necessary.

ENCLOSURES.

REPORT to accompany the estimate for Gogunta channel, a distributary on right bank at 28 miles 60 chains of Ellore canal, amounting to Rs. 10,800.

In Major Campbell's report on the distributaries of the Ellore canal an amount of Rs. 4,800 for a channel starting at 27 miles 40 chains, called the Gogunta channel, was allowed. The estimate acreage was 1,200.

2. The present plans and estimates are for the same channel with the site moved down to 28 miles 60 chains. It will supply lands hitherto cultivated under the Gundalamma (28 miles 30 chains) and Janikamma (29 miles 30 chains) sluices and the Kotapalli box sluice at 29 miles 74 chains.

3. Under the existing arrangement certain lands of Koniki and Gogunta get a very deficient supply of water and the arrangements now proposed will remedy this.

4. The head sluice is provided with three vents worked by independent shutters and gearing and will supply altogether 3,480 acres. Owing to the heavy fall of the country three drops of five feet and one of three feet are required in a total length of 2½ miles.

5. In addition to the lands hitherto cultivated under the existing sluices this channel will take up a large area which has for some years obtained its water from the Totagudem drain. The channel will supply the whole of the land between the Perikud drain on the west and the Totagudem drain on the east.

6. The present estimates amount to Rs. 10,760. This amount may be provided from the balance of the lump sum provision in the project estimates for unforeseen expenditure, as there is no balance in the item appropriated for "Distributaries, Ellore canal," provided in the project estimates :—

Already appropriated—

	RS.	RS.
Madepalli channel	15,054	
Mupparru	5,215	
Watlur	3,730	
Pedapad	8,100	
Kakulapad	8,050	
Veeravalli	6,720	
Ponukumad	6,300	
		53,169

Estimates lately submitted—	RS.	
Onugutur channel	14,125	
Chirivada do.	11,900	
		26,025
Estimates of Gogunta channel now submitted for sanction	10,800	
		10,800
Total of estimates already sanctioned and submitted for sanction	...	89,994
Lump sum provision in project (*vide* G.O., No. 577 I. of 1st October 1888)	...	55,947
Difference to be provided from unforeseen item of project estimate	...	34,047

ESTIMATE form—Abstract—Classified.

Sub-head.	Names of works.	Amount of estimate for individual work.	Total of sub-heads.	Total for each canal or distributary.	Total of each main head.
1	2	3	4	5	6
	CAPITAL EXPENDITURE NOT CHARGED TO REVENUE.	RS.	RS.	RS.	RS.
	49. IRRIGATION.				
	Kistna Delta System.				
	Eastern Section.				
	I. Works.				
	Ellore Canal.				
	3. Distributaries.				
	Gogunta Channel.				
2. Land ..	Compensation for land	1,930	1,930		
3. Works ..	Head sluice	2,380			
Do. ..	Drop No. 1	520			
Do. ..	Do. ,, 2	520			
Do. ..	Do. ,, 3	530			
Do. ..	Do. ,, 4	470	4,420		
4. Earthwork ..	Excavating channel	2,490			
Do. ..	Earthenware pipes	150	2,640		
5. Miscellaneous ..	Demarcation stones	130	130	9,120	
	Right Side Channel.				
2. Land ..	Compensation for land	180	180		
4. Earthwork ..	Excavating channel	210			
Do. ..	Earthenware pipes	80	290		
5. Miscellaneous ..	Demarcation stones	30	30	500	
	Left Side Channel.				
2. Land ..	Compensation for land	340	340		
4. Earthwork ..	Excavating channel	630			
Do. ..	Earthenware pipes	160	790		
5. Miscellaneous ..	Demarcation stones	50	50	1,180	10,800
	Grand total ..				10,800

9th February 1893.

(Signed) W. JOPP,
Ex. Engr., Kistna Eastern Dn.

No. 81 I.

Submitted to Government with a recommendation that the estimate of Rs. 10,800, forwarded by the Superintending Engineer, be sanctioned from the anticipated saving in the provision made for earthwork of the Eastern bank canal in the statement printed in Proceedings of the Madras Government No. 577 I., dated 1st October 1888.

Ootacamund, (Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
23rd May 1893. Chief Engineer for Irrigation.

To the Acting Secretary to Government,
Public Works Department, Irrigation Branch.

Order—dated 2nd June 1893, No. 488 I., Public Works.

The estimate, amounting to Rs. 10,800, for excavating Gogunta channel and its distributaries, Ellore canal, Kistna Eastern delta, is sanctioned from the source indicated by the Chief Engineer for Irrigation.

2. This sanction is registered as No. 57 I. of 1893–94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, II Circle,
with plans and estimate (8).
,, Examiner, Public Works Accounts.
,, Revenue Department.
Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 2nd.

Recd. *Encl.*

G.O., 2nd June 1893, No. 488 I.

JUNE.

Gogunta Channel

Estimate of Rs. 10,800 for excavating — and its distributaries, Ellore canal, Kistna Eastern delta, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

Read—the following paper:—

No. 40 C.E.

Progress Report for April 1893.

General.—Carpenters, masons and concrete coolies began to leave the works at Periyár at the beginning of the month, and it was with difficulty that a few gangs only were induced to remain to finish such work as was necessary to render the dam safe against possible floods during the recess. With the exception of a few of the usual April showers, the weather was favorable on the whole for work. Health at Thekady was very fairly good, a result largely due to the pains taken by the late Superintendent of Works and the present Sub-divisional officer Mr. Allen with regard to the water-supply and the housing of the coolies. At Periyár health was rather worse than usual at the beginning of the month and grew steadily worse throughout the month. There were a few isolated cases of small-pox, but fever and dysentery were the prevailing forms of sickness. It is hoped that the estimate recently sanctioned by Government for the better housing of the coolies will greatly improve their health and consequently the amount of work they are capable of doing. The month was free from fatal or serious accidents.

The rainfall at Periyár was 0·71 inches and at Thekady 1·15 inches.

Main dam.—The quantity of work done was as follows:—

	C. FT.
Rubble in surki mortar	36,999
Concrete do.	24,640
Total ...	61,639

Nearly all this work was done in the old turbine channel, viz., in closing the vent and in building the rear wall across the old turbine channel, and in laying concrete between the two. The condition of the dam when work was stopped for the recess is shown on the accompanying sections. It may be described as follows:—Front wall to uniform level of + 60 throughout with the exception of 152′ at left flank which is at + 50 to serve as a weir, and the ropeway angles which are at + 65. Concrete, average level + 38·125. Rear wall of such height as to ensure a sufficient water-cushion * in case of the front wall being topped. One cross wall behind the travelling-shunt platform to divide the portion behind the weir from the portion behind the remainder of front wall. A second cross wall near the right flank to isolate the new turbine channel from the rest of the work. The weir portion of front wall and the turbine channel

* At the old turbine channel the water-cushion is hardly sufficient owing to the departure of masons and coolies. Only an extraordinary flood would top the front wall, which is at + 60 at this point.

vents would together pass a flood of about 17,000 cubic feet per second before the remainder of the front wall is topped, and so long as the river discharge is below this figure, it will therefore be possible to continue concrete work between the two cross walls. Arrangements were made for collecting large stocks of sand, firewood, surki, and limestone during the recess to enable a fair start to be made on resumption of work in July. The barge used for stopping the flow of the river over the caisson (described in last month's report) was floated off uninjured, and the caisson subsequently lifted and uncoupled without injury beyond the loss of the top ring reported last month.

Right bank escape.—The following quantities were removed during the month :—

	C. FT.
Earth and soft rock	36,518
Rough stone quarried	30,165
Hand-broken stone	11,068
Total, rock ...	41,233

The escape is now rapidly nearing completion, the faces available for quarrying are so small, and the space available for stacking stone so small owing to the large stock already in hand, that the outturn is likely to be small for the future compared with what it has been hitherto.

Watershed cutting.—The sinking of shafts having been completed, and also a channel joining the sump at the pulsometer with the sump at the centrifugal pump, extensive faces have been available throughout the month and the quantity of stone removed has in consequence amounted to 88,246 cubic feet, or considerably more than has ever been achieved hitherto. The work should be completed (and the cutting opened for navigation) up to the bridge early next season.

Watershed tunnel.—The principal work done during the month has been the overhauling and repairing of the machinery. A small advance with the tunnelling was also made by hand-drills, amounting to 9′ at No. 1 shaft and 16′ at No. 2 shaft. This is shown on the accompanying section, and the total figures for the tunnel now stand as follows :—

	FEET.
Total length of tunnel	5,704
Length done to 30th April 1893	3,668
Length remaining to be done	2,036

The showers have set in rather earlier and more vigorously than usual at Thekady this month (May), and the supply of water will be sufficient for a recommencement of work on the tunnel by the beginning of June at latest. A sufficient supply of good firewood has been collected to last through the whole season.

Buildings, &c.—At Thekady the last of the new clerks' quarters was finished. At Periyár one of the new cooly lines was completed, two more nearly completed, and three more in progress.

The Workshop Foreman's quarters were finished except fitting of doors and windows, the workshop latrine was nearly finished, and various annual repairs were put in hand.

Miscellaneous.—36,000 cubic feet of limestone were carted from the foot of the ghaut to Periyár, and the road was maintained in good order.

KODAIKANAL,
18th May 1893.

(Signed) S. D. PEARS,
Supdt. of Works, No. I Periyár Division.

To the Chief Engineer, Public Works Department.

ORDER—dated 2nd June 1893, No. 490 I., Public Works.

Recorded and forwarded to the Government of India.

[Here enter No. 491 I., Public Works, dated 2nd June 1893.]

(True Extract.)

(Signed) J. HANNAN,
Ag. Joint Secy. to Govt., P.W.D.,
General, Buildings and Roads Branch.

To the Chief Engineer for Irrigation.
" Superintendent of Works, No. I Periyár Division.
" Revenue Department.

ENDORSEMENT—dated 2nd June 1893, No. 491 I., Public Works.

Copy of the above forwarded for the information of the Government of India.

(By Order.)

(Signed) J. HANNAN,
Ag. Joint Secy. to Govt., P.W.D.,
General, Buildings and Roads Branch.

IRRIGATION.

Govt. of {1893} Madras.

PUBLIC WORKS:

Dated June, 2nd.

Recd. *Encl.*

G.O., 2nd June 1893, Nos. 490 I., 491 I.

JUNE.

Periyar Project

Forwarding to the Government of India copy of Proceedings recording progress report of No. I Periyár division for the month of April 1893.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following papers :—

From J. C. LARMINIE, Esq., Superintending Engineer, V Circle, to the Chief Engineer for Irrigation, dated Chepâk, 9th May 1893, No. 140 E.I.

In G.O., No. 20 I., dated 10th January 1893, sanction was given to an outlay of Rs. 817 incurred in raising the Kodamurty right bank in excess of the estimate of Rs. 10,626.

The Rs. 817 does not include the amount of excess due to certain deviations sanctioned by the Superintending Engineer in February 1890, viz., Rs. 496 ; this sum having been added to the amount of the original sanction as per column 4 of the completion report herewith enclosed for reference and return, the Examiner now requests that sanction of Government may be obtained to the Rs. 496.

The estimate and outlay on the work stands as follows :—

	RS.	A.	P.
Total outlay as per completion report	11,938	15	11
Amount of sanctioned estimate	10,626	0	0
Excess ...	1,312	15	11

Rs. 817 having been already sanctioned as stated above, I have therefore the honour to request that sanction of Government may be obtained to the balance of Rs. 496.

Office note to the Examiner of Public Works Accounts, dated 13th May 1893, No. 115.
„ from „ „ „ „ 19th „ „ „ 1774.

Order—dated 6th June 1893, No. 493 I., Public Works.

The Examiner of Public Works Accounts is authorized to pass the further excess expenditure of Rs. 496 incurred on the work " raising Kodamurty right bank from its head to road No. 4" in the Tanjore division.

2. This sanction is registered as No. 58 I. of 1893-94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, V Circle, with one completion report.
„ Examiner of Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 6th.

Recd. *Encl.*

G.O., 6th June 1893, No. 493 I.

JUNE.

Kodamurty Right Bank

The Examiner authorised to pass the further excess expenditure of Rs. 496 incurred for raising — from its head to road No. 4 in Tanjore division.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation,
Account.

READ—the following paper :—

STATEMENT showing the proposed alterations to grant under Irrigation, Salem division.

Division.	Item No.	Name of work.	Amount of estimate.	Number and date of sanction.	Outlay to end of 31st March 1893.	Outlay in the current year to end of April 1893.	Balance of estimate.	Existing grant for 1893–94.	Proposed increase or decrease.	Revised or proposed grant.
Salem.		42. MAJOR WORKS.	RS.		RS.	RS.	RS.	RS.	RS.	RS.
		WORKING EXPENSES.								
		Barur Tank Project.								
	1	Extensions and Improvements.	..	..	..	..	..	..	900	900
	2	Maintenance and Repairs ..	..	..	..	..	..	3,000	900	2,100

REMARKS.—The requirements for Barur project will not need more than Rs. 2,100 under Maintenance and Repairs for 1893-94.

SALEM,
12th May 1893.

(Signed) G. E. MANSON,
Executive Engineer.

No. 123 E.I.

Copy forwarded to the Chief Engineer for Irrigation with a request that he will be good enough to obtain sanction of Government to the rearrangement of funds proposed in the foregoing statement.

(Signed) A. W. SMART, Major, R.E.,
Superintending Engineer, IV Circle.

17th May 1893.

ORDER—dated 6th June 1893, No. 494 I., Public Works.

The transfer of funds proposed by the Superintending Engineer, IV Circle, is sanctioned.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, IV Circle.
„ Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 6th.

Recd. *Encl.*

G.O., 6th June 1893, No. 494 I.

JUNE.

Funds

Certain transfer of — proposed from the current year's grant for Maintenance and Repairs, Barur Tank Project, Salem division, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

From A. A. G. MALET, Esq., Officiating Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezwada, 12th May 1893, No. 109 N.L.

I have the honour to forward herewith, for your approval and sanction of Government, abstract estimate, amounting to Rs. 1,030, for excavating minor channel 0 miles 5,000 feet right bank, Iskapalle branch channel of Kanigiri canal, and to request that you will be so good as to obtain the sanction of Government from the balance available with them for unforeseen works of the Sangam anicut system.

2. The report which accompanies the estimate explains the necessity for the work.

Enclosures.

Report to accompany the estimate for constructing minor channel 0 miles 5,000 feet righ bank, Iskapalle branch channel, Rs. 1,030..

The estimate provides for means of irrigation for the higher level portion of the bed of the abandoned Iskapalle tank amounting to about 150 acres.

There is a channel already existing taking off at $\frac{1}{4}$ mile from the head of the branch channel, but the levels do not permit of the irrigation by this channel of the portion of the tank bed alluded to, and a separate channel with a head taking off from the branch channel is necessary.

2. The channel has been designed with the minimum bottom breadth of 2 feet, side slopes $1\frac{1}{2}$ to 1 and a fall of 3 inches a mile. The depth of water is 2 feet. The discharge will be therefore three and a half feet a second which will be ample.

3. There are two masonry works—firstly, the head sluice to regulate the supply at the head, and, secondly, a regulator at the tail end of the channel to prevent the ryots tampering with the regulation by deepening the channel and drawing away all the water.

4. The drainage on the right of the channel will flow by the side pits and escape through the breach shown on the sketch.

ESTIMATE FORM—Abstract—Classified.

Sub-head.	Names of works.	Amount of estimate for individual work.	Total of sub-heads.	Total for each canal or distributary.	Total of each main head.
1	2	3	4	5	6
	CAPITAL EXPENDITURE NOT CHARGED TO REVENUE.	RS.	RS.	RS.	RS.
	49. IRRIGATION.				
	Sangam Anicut Project.				
	I. Works.				
	Kanigiri Canal.				
	3. Distributaries.				
	Iskapalle Branch Channel.				
	Minor Channel 0 miles 5,000 feet Right Bank.				
2. Land	1. Compensation for land	216	216		
3. Works ..	2. One sluice at head	350			
Do.	3. One regulator at end	74	424		
4. Earthwork ..	4. Excavation and banking	340	340		
5. Miscellaneous ..	5. Demarcation stones	50	50		
				1,030	

NELLORE,
18th April 1893.

(Signed) C. H. D. MARJORIBANKS,
Executive Engineer, Nellore division.

ORDER—dated 6th June 1893, No. 495 I., Public Works.

	RS.
Balance as per G.O., No. 415 I., dated 6th May 1893	2,886
Add amount sanctioned in G.O., No. 1067 I., dated 17th December 1892	10,284
	13,170
Deduct estimate now sanctioned ...	1,030
	* 12,140

The estimate, amounting to Rs. 1,030, for excavating minor channel 0 miles 5,000 feet right bank, Iskapalle branch channel of Kanigiri canal, is sanctioned from the balance of the amount reserved for unforeseen works of the Sangam anicut project, which will then be reduced to Rs. 12,140.*

2. This sanction is registered as No. 59 I. of 1893–94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, II Circle, with estimate.
„ Examiner, Public Works Accounts.
„ Revenue Department.
Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 6th.

Recd. *Encl.*

G.O., 6th June 1893, No. 495 I.

JUNE.

Iskapalle Branch Channel

Estimate of Rs. 1,030 for excavating minor channel 0 miles 5,000 feet right bank of the —, Kanigiri canal, Sangam anicut project, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From A. A. G. MALET, Esq., Officiating Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated 16th May 1893, No. 437 K.S.

I have the honour to forward herewith, for your approval and sanction of Government, estimate, amounting to Rs. 3,960, for excavating Chataparru channel at 40 miles 10 chains of Ellore canal, and to request that you will be so good as to obtain the sanction of Government from the balance available with the Government for unforeseen works of the Kistna delta system.

2. The report which accompanies the estimate explains the necessity for the work.

Enclosures.

Report to accompany estimate for Chataparru channel, a distributary on right bank at 40 miles 10 chains, Ellore canal, amounting to Rs. 3,960.

The estimate is prepared with a view to the better regulation of water from the Ellore canal for irrigation. The Madepalli channel head sluice at 39 miles 1 furlong, Ellore canal, was designed to supply 8,000 acres by the main vent, 200 by the right side channel and 2,000 by the left. This left side channel has not yet been made and the water is obtained from the joint masonry sluice at 39 miles 5 furlongs, the Komodanole sluice at 40 miles 1 furlong and the Chataparru drain. It was originally proposed to construct a channel from Madepalli left side sluice running for a mile under the right bank of the main canal and then for a further distance of $1\frac{1}{2}$ miles down to the Chataparru tank, crossing on the way the Jalipudy drain by means of an aqueduct.

In place of this scheme the proposal is now submitted to make a head sluice at 40 miles 1 furlong to run straight down to the Chataparru tank and in place of a side channel to retain the old joint masonry sluice to supply water to 500 acres of Ellore and Chataparru.

It is believed that this plan will be found cheaper and more convenient than taking the water from the Madepalli head sluice. The new head sluice may be assumed to cost less than the aqueduct. The channel which is 1 mile 3 furlongs long is provided with two drops, one of 3 feet fall and one of 4, and has a bed fall of $1\frac{1}{2}$ feet per mile as far as drop II, whence the channel runs in a straight line for nearly a mile into the Chataparru tank without any offtakes and with a fall of 3 feet in 5,000 and $2\frac{1}{2}$ feet bottom width. An early sanction is requested in order that the channel may be completed by next irrigation season.

ESTIMATE FORM—Abstract—Classified.

Sub-head.	Names of works.	Amount of estimate for individual work.	Total of sub-heads.	Total for each canal or distributary.	Total of each main head.
1	2	3	4	5	6
	CAPITAL EXPENDITURE NOT CHARGED TO REVENUE.	RS.	RS.	RS.	RS.
	49. IRRIGATION.				
	1. Works.				
	Kistna Delta System.				
	Eastern Section.				
	Ellore Canal.				
	(3) Distributaries.				
	Chataparru Channel.				
2. Land	1. Compensation for land	910	910		
3. Works ..	2. Head sluice	1,050			
	3. Drop No. 1	500			
	4. " " 2	500	2,050		
4. Earthwork ..	5. Excavating channel	780			
	6. Earthenware pipes	80	860		
5. Miscellaneous ..	7. Demarcation stones	140	140	3,960	
	Total ..	..	..	..	3,960

(Signed) C. A. SMITH,
Ex. Engr., Kistna Eastern division.

21st April 1893.

ORDER—dated 6th June 1893, No. 496 I., Public Works.

The estimate, amounting to Rs. 3,960, for excavating Chataparru channel at 40 miles 10 chains of Ellore canal, Kistna Eastern delta, is sanctioned from the anticipated saving in the provision made for earthwork of the Eastern bank canal in the statement printed in Proceedings of the Madras Government No. 577 I., dated 1st October 1888.

2. This sanction is registered as No. 60 I. of 1893–94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle, with estimate.
" Examiner, Public Works Accounts.
" Revenue Department.
Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 6th.

Recd. *Encl.*

G.O., 6th June 1893, No. 496 I.

JUNE.

Chataparru Channel

Estimate of Rs. 3,960 for excavating. — at 40 miles 10 chains of Ellore canal, Kistna Eastern delta, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

From A. A. G. MALET, Esq., Officiating Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezwada, 21st April 1893, No. 60 N.L.

I have the honour to forward for your approval estimate, amounting to Rupees 2,400,* for constructing a skew bridge at 0 miles 1,280 feet of Kota Penaka tank, Nellore division, in place of a bridge for which an estimate, amounting to Rs. 2,050, was already sanctioned in G.O., No. 416 I., dated 29th April 1892, and to request that you will be so good as to obtain the early sanction of Government for the revised estimate.

* Reduced to Rs. 2,300 in the office of the Chief Engineer for Irrigation.

2. The Executive Engineer has been permitted to start the work in anticipation of sanction to the estimate.

Order—dated 6th June 1893, No. 497 I., Public Works.

The following revised estimate, amounting to Rs. 2,300 as slightly reduced in the office of the Chief Engineer for Irrigation, is sanctioned in lieu of the provision of Rs. 2,050 made for a bridge in the estimate sanctioned in G.O., No. 416 I., dated 29th April 1892, for improvements to the Kota Penaka tank:—

Irrigation.
43. Minor Works and Navigation.
Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.
Original Works.

	RS.
Constructing a skew bridge at 0 miles 1,280 feet of Kota Penaka tank No. 235 of list of works of the Nellore division appended to G.O., No. 407 I., dated 6th July 1887, estimate	2,300

2. This sanction is registered as No. 61 I. of 1893–94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle, with plans and estimate (seven).
" Examiner, Public Works Accounts.
" Revenue Department.
Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 6th.

Recd. *Encl.*

G.O., 6th June 1893, No. 497 I.

JUNE.

Skew Bridge

Estimate of Rs. 2,300 for constructing a — at 0 miles 1,280 feet of Kota Penaka tank, Nellore division, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper:—

From G. E. MANSON, Esq., Executive Engineer, Salem division, to the Superintending Engineer, IV Circle, dated 5th May 1893, No. 181 S.E.

[*Reference.*—Your No. 65/S.L., dated 5th March 1893, regarding the works under the Barur project].

I have the honour to state that the works under the "Barur project" are practically completed. But for the adjustment on account of value of screw shutter gearing obtained for the Barur regulators and sundry arrears, the project would have been closed by 31st March 1893; I request that the time may be extended to 1st August 1893 as the sanction accorded in G.O., No. 778 I., dated 15th September 1892, has already expired and the fact has also been pointed out by the Examiner, Public Works Accounts, in objectionable items statement for January 1893.

No. 114 E.I.

Copy communicated to the Chief Engineer for Irrigation with reference to G.O., No. 174 I., dated 22nd February 1893, and with a request that he will be good enough to obtain the sanction of Government to extend the date of completion to 1st August 1893.

(Signed) A. W. SMART, Major, R.E.,
Superintending Engineer, IV Circle.

9th May 1893.

ORDER—dated 6th June 1893, No. 498 I., Public Works.

The date of completion of the works detailed in the revised schedule of works to be carried out on the Barur tank project chargeable to "Capital Expenditure not charged to Revenue" sanctioned in G.O., No. 778 I., dated 15th September 1892, is extended from 1st October 1892 to 1st August 1893.

2. Ordered that a copy of these Proceedings be forwarded to the Government of India for information.

[Here enter No. 499 I., Public Works, dated 6th June 1893.]

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, IV Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

ENDORSEMENT—dated 6th June 1893, No. 499 I., Public Works.

Forwarded.

(By Order.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

IRRIGATION.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 6th.

Recd. **Encl.**

G.O., 6th June 1893, Nos. 498, 499 I.

JUNE.

Barur Tank Project

Forwarding copy of Proceedings extending the date of completion of certain works connected with the — from 1st October 1892 to 1st August 1893.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following papers :—

From A. A. G. MALET, Esq., Officiating Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated Bezwada, 11th May 1893, No. 99 N.L.

I have the honour to bring to your notice that the revised estimate, amounting to Rs. 2,900, for constructing a surplus weir in Ramudupalem channel of Jaffer Sahib's canal, Penner anicut system, has been sanctioned by Government under 42. Major Works, I-A Extensions and Improvements, in their Order No. 844 I., dated 14th October 1892, but the Examiner of Public Works Accounts now points out that the revised estimate referred to above should be sanctioned under open Capital Account agreeably to para. 156 A. of the India Code, Vol. II, Chapter XV, as introduced by Standing Order No. 261, dated 3rd October 1892.

2. I therefore request that you will be so good as to obtain the sanction of Government to the revised estimate being resanctioned under capital from the balance available with them for unforeseen works of the Penner anicut system in supersession of the original sanction conveyed in Government order quoted above.

3. The revised estimate is sent herewith.

Enclosure.

Report to accompany the plan and estimate for constructing surplus weir in Ramudupalem channel.

	RS.
Amount of estimate	2,400

The flood of October 1889 which spilled through the breach in the flood bank across the old Penner damaged the weir cutting round the right wing and carrying away about half the weir ; this estimate provides for rebuilding this half of the structure on wells ; solid foundations would be expensive, as the baling charges would be heavy, water being over the surface (the sub-soil is sand chiefly). The estimate also provides for strengthening and forming banks above the weir : the right bank of the channel below the weir breached in several places ; these have all since been made up and strengthened under the sanctioned estimates for special and emergent repairs.

The flood embankment across the old Penner near Mudivertipalem has been reconstructed by the Buckingham canal division last year and the reconstruction of this weir is now desirable in order to allow the Ramudupalem channel to carry its full supply of water. Hydraulic details are shown on the plan.

(Signed) H. H. O'CONNELL,
Executive Engineer, Nellore division.

19th February 1892.

Office-note to the Examiner of Public Works Accounts, dated 15th May 1893, No. 117.
" from " " " " " 20th " " " 1802.

ORDER—dated 7th June 1893, No. 500 I., Public Works.

Under para. 156, Chapter XV of the Government of India Public Works Code, the following estimate is sanctioned in supersession of the estimate of Rs. 2,900 sanctioned in G.O., No. 844 I., dated 14th October 1892 :—

Capital Expenditure not charged to Revenue.
49. Irrigation.
Penner Anicut System.
Jaffer Sahib's Canal.
3. Distributaries.
Ramudupalem Channel.
3. Works.

	RS.
I. Works—constructing a surplus weir	2,900
II. Establishment	667
III. Tools and plant	33
Total estimate ...	3,600

2. This sanction is registered as No. 62 I. of 1893–94 and will remain current till the end of the current official year.

3. Ordered that a copy of these Proceedings be forwarded to the Government of India for information.

[Here enter No. 501 I., Public Works, dated 7th June 1893.]

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, II Circle, with estimate (5).
,, Examiner, Public Works Accounts.
,, Revenue Department.
Editors' Table.

ENDORSEMENT—dated 7th June 1893, No. 501 I., Public Works.

Forwarded.

(By Order.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 7th.

Recd. *Encl.*

G.O., 7th June 1893, Nos. 500, 501 I.

JUNE.

Ramudupalem Channel

Forwarding copy of Proceedings sanctioning the revised estimate of Rs. 3,600 for constructing a surplus weir in —, Penner anicut system.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper :—

From S. D. PEARS, Esq., Superintendent of Works, No. I Periyár division, to the Chief Engineer, Public Works Department, dated Kodaikánal, 22nd May 1893, No. 44 C.E.

I have the honour to state that Rs. 3,042 is available on the 18th May 1893 out of Rs. 15,000 placed at my disposal in G.O., No. 243 I., dated 21st March 1893, to cover sanctions to the estimates for works that may be accorded by me and to request that you will be good enough to place at my disposal a further sum of Rupees 15,000 for the same purpose.

ORDER—dated 8th June 1893, No. 503 I., Public Works.

Rs. 15,000 are placed at the disposal of the Superintendent of Works, No. I Periyár division, from the balance of the amount reserved for unforeseen works of the Periyár project, which will then be reduced to Rs. 25,741.

(True Extract.)

(Signed) J. HANNAN,
Ag. Joint Secy. to Govt., P.W.D.,
General, Buildings and Roads Branch.

To the Chief Engineer for Irrigation.
„ Superintendent of Works, No. I Periyár division.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.

Govt. of {1893} Madras

PUBLIC WORKS.

Dated June, 8th.

Recd. *Encl.*

G.O., 8th June 1893, No. 503 I.

JUNE.

Funds

Placing Rs. 15,000 at the disposal of the Superintendent of Works, No. I Periyár division, to cover sanctions to estimates for works that may be accorded by him.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers:—

G.O., dated 23rd August 1892, No. 711 I., Public Works.

From Major A. W. SMART, R.E., Superintending Engineer, IV Circle, to the Chief Engineer for Irrigation, dated 17th May 1893, No. 122 E.I.

With reference to G.O., dated 23rd August 1892, No. 711 I., I have the honour to submit herewith report on the Panjani tank project by Mr. Larminie, late Executive Engineer, North Arcot division, with which, as far as regards the Panjani project, I fully agree. I am, however, of opinion that the run off from the Gudiyátam drainage basin has been considerably understated. This is, however, a matter which will be gone into when the Murthana reservoir project is fully investigated. It may be taken that the Panjani, part of the scheme is out of the question, would not pay and as to water-supply to the town of Palmanér would fail in bad years.

2. In ordinary years no doubt such a tank would supply from 500 to 800 acres, but to place a bank across a stream draining over 300 square miles, when the run off of 20 square miles only is wanted, is a wasteful proceeding and necessitates large and generally expensive escapes and is in other ways objectionable.

ENCLOSURE.

From J. C. LARMINIE, Esq., Executive Engineer, North Arcot division, to the Superintending Engineer, IV Circle, dated 6th May 1893.

In reply to your endorsement No. 517 N.A., dated 12th September 1892, forwarding G.O., No. 711 I., of 23rd August 1892, issuing orders for the investigation of the project for a supply of water to the town of Palmanér, I have the honour to report as follows:—

(1) The question was gone into in considerable detail in the year 1878, when a special officer, Captain Elliston of the Bengal Public Works Department, was employed on its investigation. The results of his works are embodied in G.Os., Revenue F.R., Nos. 1241 of 30th May 1878 and 1886 of 3rd September 1878, and on the strength thereof the scheme was definitely condemned.

Having only just recently had an opportunity of inspecting the locality, I beg to submit the following observations for consideration before proceeding further with the investigation.

On the 14th and 15th April I examined the country along the Gudiyátam river to the north of Palmanér and to above the point on the river proposed for the offtake of the channel.

(2) The general characteristics of the catchment basin of the Gudiyátam river are very similar to those in the Mysore country, where, in connection with the Bangalore water-supply question, I had opportunities of becoming acquainted with the proportion run off and discharge bears to the varying conditions of rainfall.

(3) The rainfall register at Palmanér for the eight years 1885 to 1892 shows that on the whole the supply in the Gudiyátam river must be just as uncertain and liable to failure as any of the sources of supply around Bangalore.

(4) So much depends on the character of the rainfall. Now and again sudden very heavy falls have occurred which must have brought heavy floods down the river, but the prevailing characteristic of the rainfall is light and not very continuous showers which have but little effect in filling tanks or rivers.

(5) The average rainfall at Palmanér for the eight years 1885 to 1892 was 39·91 inches. The highest record 51·54 inches was in 1889 and lowest 31 inches in 1885.

Of the average fall 39·91, no more than 25 inches could be considered as likely to produce any run off and data worked out in Mysore show that not more than from 10 per cent. to 15 per cent. of the average fall could on the average be counted on as available for supply.

So the run off the Gudiyátam river catchment of 313 square miles above the Panjani reservoir site would be 2,908 millions of cubic feet (at 4 inches run off) as an annual average.

At 15 per cent. run off quantity would be 4,362 M.C.F. (Intld.) J. C. L.

(6) So much for the probable amount of water available for storage, and before proceeding further it should be noted that the Gudiyátam river is an important feeder of the Pálár and what the exact effect on the large irrigation system under the latter river would be, were the supply derived from the former interfered with, it is not easy to say more than that it might be very serious, dependent as the Pálár must be for its early freshets on the Gudiyátam river amongst other sources.

(7) In the year 1877–78 a detail survey of the channel proposed to supply the Palmanér tank and others situated above it and between the offtake from the river was made by Captain Elliston of the Bengal Public Works Department, who had about that time been employed in the district on famine duty.

(8) I have compared this survey (which shows levels) with the lay of the country generally and have no reason to doubt its general accuracy.

In fact without any survey or levels at all, it is quite apparent that to command the Palmanér tank and the high ridge which runs between it and the river, it would be necessary to go a long way up the river to find a suitable offtake, and this point is only reached some 6½ miles (by road) above Palmanér, while the channel therefrom would be about 15 miles in length.

Here a dam of from 30 to 40 feet in height would be required.

(9) The cost of the project has been estimated at Rs. 1,62,000 (*vide* G.O., No. 1886 of 3rd September 1878), but this makes no provision for the masonry dam or weir which should be constructed across the river. The required length would be at least 900 * feet (as it would not be advisable to pass a greater depth over than 4 feet) and height 30 feet and the probable cost would be Rs. 70,000. The cost of the channel has been put down at Rs. 32,000, fully Rs. 10,000 under the mark.

* G.O., No. 1241 of 30th May 1878.

(10) So making these allowances the total cost of the project would come to Rs. 2,42,000, say 2½ lakhs, while the returns to be derived due to increased cultivation of some 500 acres would amount to Rs. 2,500 or, say, 1 per cent. on the outlay. While considered in the light of a source of water-supply to the town of Palmanér, the scheme would most probably fail, just when most required, owing to the uncertainty of the supply in the river (now April quite dry).

This report has been detained until I could look up my papers connected with the Bangalore water-supply.

ORDER—dated 8th June 1893, No. 506 I., Public Works.

His Excellency the Governor in Council is of opinion that the facts brought forward by the Executive Engineer and Superintending Engineer are sufficient to show that the project of supplying the Palmanér tank and maintaining a drinking-water supply to the town of Palmanér is not one for consideration either from a financial or engineering point of view.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, IV Circle.
" Public Department.
" Revenue "
" presenters of the address.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 8th.

Recd. *Encs.*

G.O., 8th June 1893, No. 506 I.

JUNE.

Palmaner Tank

Observing that the project of supplying the — and maintaining a drinking-water supply to the town of Palmanér is not one for consideration of Government either from a financial or engineering point of view.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper :—

No. 82 I.

Note by the Chief Engineer for Irrigation.

In the papers printed in Proceedings of the Madras Government, No. 114 I., dated 7th February 1893, special repairs to boat "Rat" of the Kurnool-Cuddapah canal floating plant were stated to have been carried out during 1892–93 from the sum sanctioned for the boat "Elephant" in G.O., No. 140 I., dated 11th February 1892. The Examiner of Public Works Accounts having pointed out that this was irregular, the Superintending Engineer, III Circle, was requested to submit a specific estimate for the repairs to the former boat if the work was not completed, but if it was, to report the actual expenditure on it. In his letter, No. 279, dated 4th instant, the Superintending Engineer reports that the repairs to the boat were completed at a cost of Rs. 1,427, or Rs. 357 in excess of the sanctioned estimate for special repairs to the boat "Elephant."

OOTACAMUND, 31st May 1893. (Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E., Chief Engineer for Irrigation.

To the Acting Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 9th June 1893, No. 507 I., Public Works.

The Examiner of Public Works Accounts is authorized to admit the expenditure incurred on special repairs to the boat "Rat" as reported in the foregoing note by the Chief Engineer for Irrigation.

2. The Superintending Engineer, III Circle, will see that such irregular expenditure is not incurred again.

3. The sanction accorded in para. 2 of G.O., No. 140 I., dated 11th February 1892, is cancelled.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, III Circle.
" Examiner, Public Works Accounts.

IRRIGATION.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 9th.

Recd. *Encl.*

G.O., 9th June 1893, No. 507 I.

JUNE.

Boat "Rat"

The Examiner authorized to admit the expenditure incurred on special repairs to the — of the Kurnool-Cuddapah canal, and the attention of the Superintending Engineer, III Circle, directed to certain irregular expenditure incurred in connection with this boat.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper:—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 22nd May 1893, No. 135 V.Z.

I have the honour to bring to your notice that the estimate of Rs. 12,500 for repairing and improving the Kandi anicut and channel in Vizagapatam division, sanctioned in G.O., No. 545 I., dated 18th June 1892, has been classified under "43 Minor Works and Navigation, Minor Works for which neither Capital nor Revenue accounts are kept," and that funds have accordingly been provided under the same head in the current year's budget. But the work in question is really a Tank Restoration Scheme work—*vide* marginally noted correspondence.

This office No. 142 V.Z., dated 17th May 1892.
Your No 1307, dated 13th August 1892.

2. If you are of opinion that this work should be classed under Tank Restoration Scheme execution, Original, I would suggest your arranging to transfer to and assign from Tank Restoration Scheme the grant of Rs. 6,000 sanctioned in the budget under "Ordinary," "Major Original."

ORDER—dated 10th June 1893, No. 509 I., Public Works.

The following transfer of funds is sanctioned:—

Provincial.
43. Minor Works and Navigation.
Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.
Original Works.
Vizagapatam Division.

From Ordinary Works.	RS.	*To* Tank Restoration Works.	RS.
Kandi anicut and channel improvements.	6,000	Kandi anicut and channel improvements.	6,000
Establishment	1,380	Establishment	1,380
Tools and plant	90	Tools and plant	90
Total ...	7,470	Total ...	7,470

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle.
" Examiner, Public Works Accounts.
Editors' Table.

IRRIGATION.

Govt. of {1893} Madras.

PUBLIC WORKS:

Dated June, 10th.

Recd. *Encl.*

G.O., 10th June 1893, No. 509 I.

JUNE.

Funds

The grant for Kandi anicut and channel improvements, Vizagapatam division, transferred from under "Ordinary Works" to "Tank Restoration Works."

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

Office-note from the Examiner, Public Works Accounts, dated Madras, 29th May 1893, No. 1840 C.

I beg to forward herewith (in original to be returned) letter, No. 1117 Ry., dated 17th May 1893, with its enclosure, from the Examiner, Telegraph Accounts, from which it will be seen that he proposes to debit this department with Rs. 36,600 on account of "portion of the capital cost of the telegraph line, Cuddapah to Kurnool and Sunkesala," in his accounts for the year 1892–93.

2. As there is no provision in the revised budget estimates for 1892–93 to meet this charge, early orders of Government are requested as to the acceptance or otherwise of the proposed debit.

3. I may state that a special grant of Rs. 35,000 was sanctioned by the Government of India (*vide* G.O., No. 14 I., dated 10th January 1893) under 42. Major Works, Working Expenses, to meet the charge to the Kurnool canal on account of the telegraph line which has been ordered to be dismantled; but it is not clear to me whether this work is identical with the one for which the charge of Rs. 36,600 has been preferred.

ENCLOSURE.

From the Examiner of Telegraph Accounts, to the Examiner, Public Works Accounts, Madras, dated Calcutta, 17th May 1893, No. 1117 Ry.

I have the honour to forward herewith an advice of transfer showing Rs. 36,600 debitable to the Madras Government in the accounts for 1892–93 in connection with the Cuddapah-Kurnool telegraph line, and to request that credit for the same may be afforded in your accounts for March 1893, supplementary.

2. This debit of Rs. 36,600 has been raised under instructions of the Director-General of Telegraphs who has requested me to inform you that, owing to short recovery of stores and other causes, the claim of this department against the Madras Government on account of the line in question at present stands at a much higher sum than Rs. 36,600, but that this has been made the subject of a reference to the Government of India, Public Works Department, and that no claim in excess of the abovementioned sum of Rs. 36,600 will be made in connection with the accounts of 1892–93, the question of any further adjustment being left to be disposed of in 1893–94.

ORDER—dated 10th June 1893, No. 510 I., Public Works.

The Examiner of Public Works Accounts is authorized to accept the charge against the grant for the Kurnool-Cuddapah canal under "42. Major Works (Working Expenses)" for 1892–93.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, III Circle.
,, Examiner, Public Works Accounts, with two enclosures (returned).
,, Superintendent of Government Telegraphs, Madras Division.
,, Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 10th.

Recd. *Encl.*

G.O., 10th June 1893, No. 510 I.

JUNE.

Telegraph Line

The Examiner authorised to accept the charge of Rs. 36,600, being a portion of the capital cost of the — from Cuddapah to Kurnool and Sunkesala.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

Read—the following paper :—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 21st May 1893, No. 200 G.N.

I have the honour to bring to your notice that an estimate, amounting to Rupees 250, for repairing Damodarapalli channel in Aska estate in the Ganjám division, was sanctioned by me in August last. The length of the channel which it is proposed to clear lies wholly in the Aska estate, but that this channel irrigates lands in three estates as noted below :—

	Acres.	Assessment. RS.
Aska	36	345
Kurla	120	1,100
Dhárákóta	84·5	532

These three estates will be benefited by the clearance.

2. The Executive Engineer has now reported that he was informed by the Collector that the Kurla proprietor has paid his share of contribution amounting to Rs. 124–11–10. The other two estates are now under the Court of Wards.

3. I therefore request that you will be good enough to obtain the sanction of Government to the contribution work in question being executed by this department under para. 78, chapter IX of the Public Works Code.

Order—dated 10th June 1893, No. 511 I., Public Works.

The execution of the work referred to by the Public Works Department is sanctioned.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, I Circle.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 10th.

Recd. *Encl.*

G.O., 10th June 1893, No. 511 I.

JUNE.

Damodarapalli Channel

The execution by the Public Works Department of the contribution work of repairs to — in Aska estate, Ganjám division, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper :—

From C. VINCENT, Esq., Under Secretary to the Government of India, Public Works Department (Civil Works—Irrigation), to the Secretary to the Government of Madras, Public Works Department, dated Simla, the 29th May 1893, No. 113 I.

I am directed to request that a list of the Protective Irrigation Works and Minor Works and Navigation in Madras, the construction estimates of which will have to be closed in accordance with the rules in para. 181 A. of Public Works Department Code, Volume II, Chapter XV (*vide* Standing Order No. 251, dated the 5th August 1892), may be prepared and submitted to the Government of India at an early date. It should be stated in each case from what date the Local Government would propose to close the construction estimate.

ORDER—dated 10th June 1893, No. 512 I., Public Works.

Communicated to the Chief Engineer for Irrigation for early compliance.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Examiner, Public Works Accounts.

IRRIGATION.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 10th.

Recd. *Encl.*

G.O., 10th June 1893, No. 512 I.

JUNE.

Protective Irrigation Works and Minor Works and Navigation in Madras

Letter from the Government of India requesting the early preparation and submission to that Government of a list of the —, the construction estimates of which will have to be closed, communicated to the Chief Engineer for Irrigation for early compliance.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From R. G. MACDONALD, Esq., Officiating Deputy Secretary to the Government of India, Public Works Department (Account—Irrigation), to the Secretary to the Government of Madras, Public Works Department, dated Simla, the 29th May 1893, No. 65 A.I.

In acknowledging receipt of the final issue of the budget estimates of the Irrigation Branch, Madras, for 1893-94, forwarded with your endorsement No. 376 I., dated the 29th April 1893, I am directed to state that as some errors were noticed in the figures on page 8, part IV of the budget estimate of Minor Works and Navigation showing how the amounts chargeable to 43. Minor Works and Navigation during 1892-93 and 1893-94 on account of establishment have been arrived at, the budget estimate has been revised in this office and a corrected copy is forwarded herewith for information.

2. I am also directed to invite attention to the alterations made in the figures on page 11 of the budget estimate which become necessary in order to make the details work up to the total charges for establishment which it was considered undesirable to alter, as a change in the total establishment charges would necessitate several corrections in the other parts of the budget estimate.

ORDER—dated 10th June 1893, No. 513 I., Public Works.

Communicated to the officers concerned for information.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation,
" Superintending Engineers,
" the Superintendent of Works, No. I Periyár Division,
" the Examiner of Public Works Accounts,
" the Revenue Department,
" the Financial Department,
} with a copy of corrected budget estimate.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 10th.

Recd. *Encl.*

G.O., 10th June 1893, No. 513 I.

JUNE.

Budget Estimates of the Irrigation Branch, Madras, for 1893-94

Letter from the Government of India pointing out certain corrections made by that Government in the final issue of the —, communicated to officers concerned for information.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 22nd May 1893, No. 509 G.D.

I have the honour to submit herewith an estimate, amounting to Rs. 1,280, for excavating a parallel channel from Sallapalli channel head to end of Amalápuram canal, and to request that you will be so good as to obtain sanction of Government to the same under "Capital" agreeably to volume II, chapter XV, para. 156 A. of Public Works Code as introduced by S.O. No. 261, dated 3rd October 1892.

2. This channel is connected with the Gódávari delta system, Central section.

3. The object of this channel is to enable a more economical distribution of water to be made by the removal of a number of spouts in the main canal. A sluice was originally constructed under "Capital" at the head of the proposed parallel channel.

ENCLOSURE.

REPORT to accompany the estimate for excavating a parallel channel from Sallapalli channel head to end of Amalápuram canal along left bank amounting to Rs. 1,280.

[*Canal Mileage—38 miles 40 chains of Amalápuram canal.*]

The necessity of this channel is to take up a lot of low spouts on the main canal and thereby economise water. The masonry sluice for this channel has already been constructed under capital works.

(Signed) R. A. SRINIVASA AIYANGAR,
Offg. Executive Engineer,
Gódávari Western Division.

26th August 1892.

ORDER—dated 12th June 1893, No. 519 I., Public Works.

The following estimate is sanctioned :—

Capital Expenditure not charged to Revenue.
49. Irrigation.
Gódávari Delta System.
Western Section.
Amalápuram Canal.
3. Distributaries.
4. Earthwork.
Excavating a parallel channel from Sallapalli channel head to end of canal.

	RS.
I. Works	1,280
II. Establishment	294
III. Tools and Plant	6
Total estimate ...	1,580

2. This sanction is registered as No. 63 I. of 1893–94 and will remain current till the end of the current official year.

3. To meet the outlay on the above work the following transfers of funds are sanctioned :—

Capital Expenditure not charged to Revenue.
49. Irrigation.

From Kistna Delta System. Eastern Section.	RS.	*To* Gódávari Delta System. Gódávari Western Division.	RS.
Works estimated to cost Rs. 2,500 or less, item No. 61, Part II of Major Works budget, final issue	1,285	Parallel channel from Sallapalli channel head to end of Amalápuram canal. Works	1,280
Establishment	295	Establishment	294
		Tools and Plant	6
	1,580		1,580

4. Ordered that a copy of these Proceedings be forwarded to the Government of India for information.

[Here enter No. 520 I., Public Works, dated 12th June 1893.]

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, I Circle, with estimate (2).
,, Superintending Engineer, II Circle.
,, Examiner, Public Works Accounts.
,, Revenue Department.
Editors' Table.

ENDORSEMENT—dated 12th June 1893, No. 520 I., Public Works.

Forwarded.

(By Order.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 12th.

Recd. *Encl.*

G.O., 12th June 1893, Nos. 519, 520 I.

JUNE.

Parallel channel from Sallapalli channel head to end of Amalapuram Canal

Forwarding copy of Proceedings sanctioning an estimate of Rs. 1,580 for excavating a—.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following papers :—

Memorandum from the Board of Revenue (Revenue Settlement, Land Records and Agriculture), dated 21st March 1893, Mis. No. 1728.

The Tahsildar of Arcot reports that he has transferred the source No. 269 Seethathur tank from class IV to class II, stating that it is now entirely fed by the Pálár anicut (class II). He also reports that the source No. 234 Sivaram tank (class Imperial IV) was long ago abandoned and its bed assigned for cultivation. The Chief Engineer for Irrigation will be requested to be good enough to state whether there is any objection to retain the former source in the 2nd class and whether the latter may be removed from Mr. Russell's list of sources.

From J. M. LACEY, Esq., Assistant Engineer, in charge of North Arcot division, to the Superintending Engineer, IV Circle, dated 20th May 1893, No. 148 S.E.

With reference to your No. 154 N.A. of 12th April 1893, I have the honour to inform you that the Seethathur tank comes under the Pálár anicut system, Southern section, Dusi channel, Vada Manapakkam branch channel.

The tank in question classed as Imperial and No. 269 and described as belonging to the Seethathur tank group is the Kahanam tangal and forms one of the sources of irrigation to the Kahanam village. It irrigates only 17·43 acres as described in the Land Settlement Descriptive Memoir. A mistake evidently has been made here.

With regard to the Sivaram tank, Imperial No. 234, the bed of the tank has been assigned for cultivation and the only source of irrigation for the village is its spring channel. Under these circumstances, the tank in question may be removed from the Imperial list.

No. 133 E.I.

Copy forwarded to the Chief Engineer for Irrigation with reference to his endorsement No. IV/32 N.A., dated 6th April 1893.

(Signed) A. W. SMART, Major, R.E.,
Superintending Engineer, IV Circle.

27th May 1893.

No. 83 I.

Submitted to Government.

2. The *Seethathur* tank No. 269 and Sivaram tank No. 234 of the list of Minor Works for which neither Capital nor Revenue accounts are kept, P.W.D., in the North Arcot district, communicated with G.O., No. 407 I., dated 6th July 1887, may both be struck off the list, the first tank being a component work of the Pálár anicut system.

OOTACAMUND, 5th June 1893. (Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E., Chief Engineer for Irrigation.

To the Acting Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 12th June 1893, No. 521 I., Public Works.

The two tanks referred to will be struck off the list of Minor Works for which neither Capital nor Revenue accounts are kept, P.W.D., in the North Arcot district.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E., Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, IV Circle.
„ Examiner, Public Works Accounts.
„ Revenue Department.
„ Board of Revenue (Revenue Settlement, Land Records and Agriculture).

IRRIGATION.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 12th

Recd. *Encl.*

G.O., 12th June 1893, No. 521 I.

JUNE.

Seethathur and Sivaram Tanks

The —, ordered to be struck off the list of Minor Works for which neither Capital nor Revenue accounts are kept, P.W.D., in the North Arcot district.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 26th May 1893, No. 553 G.D.

I have the honour to bring to your notice that circular trap punt No. 103 belonging to the floating plant of the Gódávari Eastern division was transferred on loan to the Kistna Eastern division in last official year at the request of the Executive Engineer of the latter division. He now asks for the permanent transfer of the punt to his division, and the Executive Engineer, Gódávari Eastern division, recommends her permanent transfer as she is not required in his division. I therefore request that you will be so good as to obtain the sanction of Government to her transfer to the Kistna Eastern division at a value of Rs. 422, at which it now stands in the books of the division. She was built in 1882–83 at an estimated cost of Rs. 1,200 sanctioned in G.O., No. 305 I., dated the 7th May 1881.

No. 84 I.

Submitted to Government with a recommendation that the permanent transfer to the Kistna Eastern division of circular trap punt No. 103 belonging to the floating plant of the Gódávari Eastern division be sanctioned, its value Rs. 422, at which it now stands in the books of the Gódávari Eastern division, being met from the balance of the lump sum provided for tools and plant in the Kistna delta completion estimates. The cost of the punt may be adjusted by debit to the Kistna delta system.

2. In G.O., No. 305 I., dated 7th May 1881, an estimate, amounting to Rs. 1,200, was sanctioned for construction of this punt and it was built in 1882–83. The difference between the original estimate and the present value of the punt is Rs. 778.

Ootacamund, 7th June 1893. (Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E., Chief Engineer for Irrigation.

To the Acting Secretary to Government, Public Works Department, Irrigation Branch.

ORDER—dated 14th June 1893, No. 527 I., Public Works.

The permanent transfer to the Kistna Eastern division of the circular trap punt No. 103 belonging to the floating plant of the Gódávari Eastern division is sanctioned. Its cost Rs. 422 will be met from the balance of the lump sum provision for tools and plant in the Kistna delta completion estimates, which will then be reduced to Rs. 1,35,736. The Superintending Engineer, II Circle, will see that the adjustment is made at an early date.

2. This sanction is registered as No. 64 I. of 1893–94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, I Circle.
„ „ „ II „
„ Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 14th.

Recd. *Encl.*

G.O., 14th June 1893, No. 527 I.

JUNE.

Circular Trap Punt No. 103

The permanent transfer to the Kistna Eastern division of the — belonging to the floating plant of the Gódávari Eastern division, sanctioned with remarks.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper :—

From C. H. D. MARJORIBANKS, Esq., Executive Engineer, Nellore Division, to the Superintending Engineer, II Circle, dated 25th April 1893, No. 40.

I have the honour to submit a revised estimate, amounting to Rs. 60,100, for Allúru main drain and affluents and to request that you will be good enough to obtain sanction for the same. The necessity for the revision is explained in the comparative statement and the report accompanying.

Enclosure.

Report to accompany the revised estimate for the Allúru swamp drainage scheme.

		RS.
Amount of	original estimate	53,800
	revised do.	60,100

The necessity for the revision of the estimate has arisen from an oversight in estimating the rates for the lower reaches of the drain and its affluents.

The same rates were given for the lower as for the upper reaches; as the former are much wider than the latter, the lead and (consequently) the rate are greater.

Better provision for demarcation has also been made. The laterite stones intended to be used at first are unsuitable being liable to crumble away by the action of the sea air and alkali in the soil; granite stones instead will be used. The increase is small.

No. 142 N.L.

Forwarded to the Chief Engineer for Irrigation to obtain the sanction of Government for the revised estimate amounting to Rs. 60,100.

2. An estimate, amounting to Rs. 53,800, was originally sanctioned in G.O., No. 494 I., dated 25th May 1892, and the excess of Rs. 6,300, as per revised estimate, is due to the low rates provided in the original estimate as explained in the comparative statement and in the report which accompanies the estimate.

3. The excess may be sanctioned from the balance available for unforeseen works including the sum of Rs. 10,284 transferred from tools and plant to works in G.O., No. 881 I. of the 28th October 1892.

(Signed) A. A. G. MALET,
Offg. Suptg. Engr., II Circle.

27th May 1893.

No. 85 I.

Submitted to Government with a recommendation that the revised estimate of Rs. 60,100 be sanctioned.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

OOTACAMUND,
7th June 1893.

To the Acting Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 16th June 1893, No. 535 I., Public Works.

G.O., No. 494 I., dated 25th May 1892.
" " 781 I. " 16th Sept. "

The following revised estimate is sanctioned in supersession of the estimate of Rs. 53,800 sanctioned in the orders marginally noted, the excess of Rs. 6,300 being met from the balance of the amount reserved for unforeseen works of the Sangam anicut system, which will then be reduced to Rs. 5,840 :—

Capital Expenditure not charged to Revenue.
49. Irrigation.
Sangam Anicut System.
I. Works.
4. Drainage and Protective Works.
Allúru Main Drain and Affluents.

	RS.
2. Land.	
1. Compensation for land	5,600
4. Earthwork.	
2. Excavating main drain and affluents	53,630
5. Miscellaneous.	
3. Fixing demarcation stones	870
Total estimate ...	60,100

2. This sanction is registered as No. 65 I. of 1893-94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle, with estimate (9).
" Examiner, Public Works Accounts.
" Revenue Department.
Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 16th.

Recd. *Encl.*

G.O., 16th June 1893, No. 535 I.

JUNE.

Alluru Main Drain and Affluents

Revised estimate of Rs. 60,100 for the — Sangam anicut project, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following papers :—

From J. C. Larminie, Esq., Superintending Engineer, V Circle, to the Chief Engineer for Irrigation, in charge Tank Restoration Scheme, dated Chepâk, 5th May 1893, No. 131 E.I.

I have the honour to submit for sanction revised estimates and comparative statements for original and repair works required to the Kuvam tank in Conjeeveram taluk, Chingleput division, together with the report called for in your memorandum No. 257 T., dated 27th February 1893.

Enclosures.

Report to accompany revised estimate for Kuvam tank, Imperial No. 234.

	RS.
Estimate amount—	
Original work	10,600
Repairs	14,900
Total ...	25,500

This estimate is prepared with reference to memo. No. 1514 T., dated 13th September 1892, of the Chief Engineer for Irrigation, Tank Restoration Scheme.

The tank was inspected by the Superintending Engineer, V Circle, on the 28th September 1892 and the estimate revised in accordance with his instructions contained in his inspection notes of that date, attached.

The reasons for the revised estimate are as follow :—

Repairs.

Earthwork.—The excess (*vide* comparative statement) is due to the bund requiring extra raising as shown in red ink figures on the longitudinal section which were taken just before starting work. The rear slope had been much cut up and gullied and for rectifying such defects there is no provision in the sanctioned estimate. Besides the model sections put up showed that the earth would fall beyond the rear slope and not on it as it would appear from the sections accompanying. The rates which differ from the one rate of Rs. 4 in the original estimate have been fixed with reference to lead and lift.

Turfing.—Owing to excess in earthwork, the area turfed and to be turfed exceeds that of sanctioned estimate.

Prickly-pear.—Before commencing the work, the prickly-pear bushes were carefully measured and found in excess of original estimate.

Repacking old revetment.—There is a saving of Rs. 298 in this item owing to certain portions being found good.

Gravel backing.—The excess is due to increased rate (*vide* data attached).

Filling in interstices of revetment with pebbles.—This is allowed in accordance with the Superintending Engineer's instructions, which he considered preferable in places to pulling down and repacking old revetment.

Masonry works.—The chief excess under this head is Rs. 181 owing to providing new shutters to calingulahs.

Original Work.

Extending byewash.—The excess is due to the increased rate for new laterite stones (*vide* data attached).

Raising revetment.—The excess in quantity is due to there being no provision in the original estimate for packing the interstices in the old revetment and for a toe wall to revetment in deep bed of tank 3,000 feet in length considered necessary and in amount to the increased rate (*vide* data attached).

Gravel and pebble backing.—The excess in the former is due to increased rate (*vide* data attached); the latter is allowed in the estimate for work to be done as per instructions of the Superintending Engineer.

Pebbles for interstices to new revetment.—This is allowed in lieu of stone chips in accordance with the Superintending Engineer's instructions, being cheaper.

All work to be done in accordance with the standard specifications and to the entire satisfaction of the Executive Engineer.

(Signed) H. C. BERLIE,
Assistant Engineer.

NOTES of inspection for September 1892 of the Superintending Engineer, V Circle.

Kuvam tank.—The estimates sanctioned for this tank are—

	RS.
Original work	4,810
Repairs	6,640

In April last revised estimates of Rs. 23,800 and Rs, 11,610 were prepared, the principal excess in the former being Rs. 18,310 for raising the revetment, while the latter also contained items raising the cost of revetment by Rs. 2,692. The excess is both in quantities and rates. The Chief Engineer for Irrigation refused to sanction these estimates without proof of the necessity for the increase and the estimates were resubmitted in August with a detailed report from the Executive Engineer. As it was a matter of opinion to what extent reconstruction of the revetment was necessary, the present inspection has been made chiefly in order to decide on this point. The revised estimates allow for pulling down all the old revetment except 1,500 feet and rebuilding it with gravel backing and raising it to 1½ feet above M.W.L. The Executive Engineer's reason for allowing for rebuilding so much was that he considered the old revetment, which is generally badly built and without backing, would not stand raising. In this I think he was to a great extent mistaken. I consider the estimate may be revised to provide for—

(1) Sundry repairs and rebuilding of existing revetment where it has fallen except parts referred to in (4).

(2) Filling the interstices with small stone wherever they are open. In many places spaces between stones are filled with earth and grass is growing in the joints. These places need not be disturbed.

(3) Raising old revetment from left flank of tank to ramp the village and from sluice No. 6 to No. 2 calingulah. Top of revetment to be made 1 foot above M.W.L., but wherever existing revetment is at all higher than M.W.L., it may be left at its present level.

(4) Rebuilding old revetment and raising to 1½ feet above M.W.L. from village ramp to sluice No. 6. The toe wall provided in revised estimate is also required.

(5) Pebbles from the hill west of the tank, if obtainable in sufficient quantity, should be used for backing. This backing will be better than gravel and not nearly so expensive.

* * * * *

(Signed) W. HUGHES,
Superintending Engineer, V Circle.

3rd October 1892.

No. 86 I.

Note by the Chief Engineer for Irrigation.

Submitted to Government with a recommendation that the revised estimate, amounting to Rs. 25,500, for repairing and improving Kuvam tank in Sembarambakkam minor basin, Conjeeveram taluk, Chingleput district, forwarded by the Superintending Engineer, V Circle, be sanctioned, the whole of the proposed outlay being classed under "Original Works."

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

OOTACAMUND,
8th June 1893.

To the Acting Secretary to Government, Public Works Department,
Irrigation Branch.

ORDER—dated 16th June 1893, No. 536 I., Public Works.

The following revised estimate, amounting to Rs. 25,500, for repairing and improving the Kuvam tank, is sanctioned in supersession of the estimates for original works and repairs aggregating Rs. 11,450 sanctioned by the Chief Engineer for Irrigation in 1889–90 :—

Irrigation.
43. Minor Works and Navigation.
Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.
Chingleput Division.
Original Works.

	RS.
Repairing and improving the Kuvam tank, No. 234 of the list of works appended to G O., No. 407 I., dated 6th July 1887, estimate	25,500

2. This sanction is registered as No. 66 I. of 1893–94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, V Circle, with estimate (3).
" Examiner, Public Works Accounts.
" Revenue Department.
Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 16th.

Recd. *Encl.*

G.O., 16th June 1893, No. 536 I.

JUNE.

Kuvam Tank

Revised estimate of Rs. 25,500 for repairing and improving the —, Chingleput division, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 16th May 1893, No. 444 G.D.

I have the honour to submit, herewith, an estimate, accompanied by sections, &c., amounting to Rs. 20,400, for diversion of Gowtami river bank at Merlapalem set, and to request that you will be so good as to obtain sanction of Government to the same.

2. The extensive diversion now proposed is necessitated by the fact that a considerable portion of the river bank has been washed away during and after the flood of September 1892.

3. Data for the rates allowed in the estimate is herewith submitted.

4. The land proposed to be taken up will be demarcated with stones after the set stops acting.

5. Owing to the urgency of the work I have given orders for the work to be commenced in anticipation of sanction. Owing, however, to the paucity of coolies, Mr. Howley, the Sub-division officer, has been unable to procure any labour for this work. The rate has been raised from Rs. 3-12-0 to Rs. 4 to induce labour to come from a distance.

ENCLOSURE.

REPORT to accompany the estimate for diversion of Gowtami right bank at Merlapalem set.

A considerable portion of the river bank having been washed away during and after the flood of September 1892, an extensive diversion at this place is now necessary.

There is a bad set here; the bank has already been diverted several times, but the erosion is so rapid that it has been washed away each time almost as soon as it was completed.

The length of the set is so great and the nature of the soil so friable (consisting of alternate layers of sand and sandy loam) that all attempts to protect the river margin by nanal planting at a moderate cost have hitherto completely failed.

The line of diversion now proposed is shown on the tracing; the bank will be carried on the river side of the hamlet of Kottapalem and for the rest of the way as much as possible along *punta* in order to save compensation. Its length will be 3,000 yards, top width 9 feet, side slopes $1\frac{1}{2}$ to 1, and height $4\frac{1}{2}$ feet above maximum flood level. A berm, 9 feet wide, will be taken up on each side of the bank. Thick hedges run along both sides of the *punta*; allowance is made to remove one, retaining the other along the outer toe of new bank to break wash of waves.

(Signed) B. H. YOUNG,
Ex. Engr., Gódávari Western Dn.

13th March 1893.

No. 87 I.

Submitted to Government with a recommendation that the estimate of Rupees 20,400, forwarded by the Superintending Engineer, I Circle, be sanctioned.

Ootacamund, (Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
8th June 1893. Chief Engineer for Irrigation.

To the Secretary to Government, Public Works Department,
Irrigation Branch.

Order—dated 16th June 1893, No. 537 I., Public Works.

The following estimate is sanctioned :—

Irrigation.
43. Minor Works and Navigation.
Agricultural Works.
River Embankment.
Original Works.
Gódávari Western Division.

	RS.
Diversion of Gowtami river bank at Merlapalem set, estimate ..	20,400

2. This sanction is registered as No. 67 I. of 1893–94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, I Circle,
with plans and estimates (9).
„ Examiner, Public Works Accounts.
„ Revenue Department.
Editors' Table.

IRRIGATION.
ACCOUNT.

Gobt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 16th.

Recd. *Encl.*

G.O., 16th June 1893, No. 537 I.

JUNE.

Gowtami River Bank

Estimate of Rs. 20,400 for the diversion of the — at Merlapalem set, Gódávari Western division, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From J. E. PAUL, Esq., Executive Engineer on Special Duty, Vamsadhára Investigation Project, to the Chief Engineer for Irrigation, dated Palkonda, 24th May 1893, No. 164.

I have the honour to forward, herewith, an estimate for "surveying and mathematical instruments" for the Vamsadhára Investigation Project, amounting to Rupees 2,000, for your sanction. All the instruments have been received on indents passed by you except for eight levelling staves, for which I telegraphed to you on 27th April 1893.

ORDER—dated 17th June 1893, No. 539 I., Public Works.

The following estimate is sanctioned :—

Irrigation.
43. Minor Works and Navigation.
Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.
Tools and Plant.
4. Miscellaneous.

	RS.
Surveying and mathematical instruments required for investigation of Vamsadhára project, estimate	2,000

2. This sanction is registered as No. 68 I. of 1893-94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation, with estimate.
" Examiner, Public Works Accounts.
" Superintending Engineer, I Circle.
" General Superintendent, Public Works Stores.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 17th.

Recd. *Encl.*

G.O., 17th June 1893, No. 539 I.

JUNE.

Surveying and Mathematical Instruments

Estimate of Rs. 2,000 for — required for investigation of Vamsadhára project, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 29th May 1893, No. 219 G.N.

I have the honour to submit, herewith, an estimate for Rs. 870 for glazed stoneware pipes to serve as sluices in the Rushikulya canal below Errendra and to request that you will be so good as to obtain sanction of Government to the same.

2. The Executive Engineer, Rushikulya Division, reports that he has completed fixing the sites for the necessary sluices in the Rushikulya canal below Errendra in view to its being opened as soon as possible and that he ordered the pipes in question in anticipation of sanction, as the canal cannot be well opened until they are inserted.

3. Of the 31 sluices now to be introduced, many will remain finally. Those that do not will, it is proposed, be utilized partly by lengthening those which remain and partly on the Ichchhápuram channel.

4. A sum of Rs. 5,000 has been provided for minor works under the Rushikulya canal in the revised statement for the Rushikulya project submitted with my letter No. 1127 G.N., dated 9th February 1893, and the present charge of Rs. 870 can be met out of it.

ORDER—dated 17th June 1893, No. 549 I., Public Works.

The following estimate is sanctioned from the provision of Rs. 10,000 under the sub-head "O. Miscellaneous" made for minor works of the Rushikulya canal in the revised estimate for the Rushikulya project printed in Proceedings of the Madras Government, No. 482 I., dated 4th September 1890:—

Famine Relief and Insurance.
35. Protective Irrigation Works.
Rushikulya Project.
I. Works.
2. Main Canals and Branches.
Rushikulya Canal.
15. Miscellaneous.

Glazed stoneware pipes, estimate 870

2. This sanction is registered as No. 69 I. of 1893–94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt. P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle, with estimate.
" Examiner, Public Works Accounts.
" Revenue Department.
Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 17th.

Recd. *Encl.*

G.O., 17th June 1893, No. 549 I.

JUNE.

Glazed Stoneware Pipes

Estimate of Rs. 870 for — to serve as sluices in the Rushikulya canal below Errendra, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper :—

From C. VINCENT, Esq., Under Secretary to the Government of India, Public Works Department (Civil Works—Irrigation), to the Secretary to the Government of Madras, Public Works Department, dated Simla, 2nd June 1893, No. 117 I.

I am directed to invite your attention to Public Works Department letter No. 250 I., dated the 7th October 1892, and to say that, as pointed out therein, the extension of the Secretary of State's sanction to the estimates of the Kistna delta system, authorized in paragraph 2 of Public Works Department letter No. 10 I. of the 22nd January 1889, expired on the 31st March 1893. I am, therefore, to request that, if a further extension of the sanction is considered desirable, the necessary application may be submitted for the orders of the Government of India as soon as possible in accordance with the rules in paragraph 162, chapter XV, of Public Works Department Code, volume II.

ORDER—dated 17th June 1893, No. 550 I., Public Works.

Communicated, for early attention, to the Chief Engineer for Irrigation and the Superintending Engineer, II Circle, in continuation of G.O., No. 869 I., dated 26th October 1892.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, II Circle.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 17th.

Recd. *Encl.*

G.O., 17th June 1893, No. 550 I.

JUNE.

Kistna Delta System

Letter from the Government of India requesting that, if necessary, early application for a further extension of the Secretary of State's sanction to the estimates of the — may be submitted, communicated for early attention to officers concerned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following papers:—

From J. C. LARMINIE, Esq., Superintending Engineer, IV Circle, to the Chief Engineer for Irrigation, dated 1st March 1893, No. 57 E.I.

Adverting to your notes of inspection in November 1891 while Superintending Engineer of the Circle, I have the honour to state that the Executive Engineer, North Arcot Division, has sent in plans and estimates, amounting to Rs. 2,485, for the required repairs and improvements to the Pushpagiri tank and its supply channel in Polur taluk.

2. This is a minor tank affecting Villupuram-Guntakal State Railway—*vide* return submitted with my letter No. 16 E.I., dated 19th January 1893.

3. The above improvements, if carried out, will increase the ayacut under the tank from 151 to 203 acres.

4. In these circumstances I request you will be good enough to transfer the tank to the list of works for which neither Capital nor Revenue accounts are kept, P.W.D., to enable this department to undertake the execution of the works.

To the Superintending Engineer, IV Circle, dated 13th March 1893, No. 21 N.A.

From Major A. W. SMART, R.E., Executive Engineer, North Arcot Division, to the Superintending Engineer, IV Circle, dated 31st March 1893, No. 747 S.E.

With reference to your endorsement No. 116 N.A., dated 20th March 1893, on memo. No. IV/21 N.A., of the 13th idem, from the Chief Engineer for Irrigation, I have the honour to inform you that Pushpagiri tank is an isolated, rainfed tank depending for its supply on its own catchment area of 3·5 square miles and in addition receives 145 cubic feet of water by the supply channel taking off a hill stream flowing into the Aliabad main channel. The tank surpluses into the Aliabad main channel.

2. The average cultivation and revenue have been given as 132 acres and Rs. 650, respectively, in the hydraulic statement by the Sub-divisional officer which figures are presumably the average of the past five years.

3. A tracing from the Polur taluk map is also sent showing the position of tank, &c.

No. 81 E.I.

Copy submitted to the Chief Engineer for Irrigation with reference to his memo. No. IV/21 N.A., dated 13th March 1893.

(Signed) A. W. SMART, Major, R.E.,
Superintending Engineer, IV Circle.

8th April 1893.

To the Superintending Engineer, IV Circle, dated 19th April 1893, No. 37 N.A.

From J. M. LACEY, Esq., Assistant Engineer in charge of North Arcot Division, to the Superintending Engineer, IV Circle, dated 13th May 1893, No. 129 S.E.

With reference to your endorsement No. 201, of 27th April 1893, on Chief Engineer's memo. No. IV/37 N.A., dated 19th idem, I have the honour to return the papers; the supply channel estimate having been corrected as therein required and the amount of the estimate has thus been reduced from Rs. 840 to Rs. 220 and the estimate of the proposed new weir in the tank has also been corrected and the amount brought down to Rs. 70 from Rs. 95. With regard to the north calingulah in the tank, the fall is only 2·8′ and a retaining wall will be put in if really necessary during execution of the work.

2. A slope of 1½ to 1 in front, where no revetment is provided in the tank bund, has already been at the first instance proposed.

3. The necessary details as regards the source of supply, acreage, &c., together with a sketch map (attached with the estimate) was already furnished to you with this office No. 747 S.E., dated 31st March 1893; but, however, the informations have now been embodied in a form and the sketch maps formerly sent have also now been returned.

Enclosures.

Report to accompany the estimates for the repairs, &c., of the Pushpagiri channel and tank, Polur taluk.

This tank was recently transferred from minor to imperial list.* The estimate for its complete repairs was called for by the Superintending Engineer in his inspection notes and his remarks in the Aliabad anicut order book.

The ayacut under this tank is 151 acres, but it is capable of increase to 203 acres provided the tank bund and the channel are made up properly.

Provision is, therefore, made in the estimates first to give a proper embankment to the channel on the left side so that no water may escape unnecessarily without going into the tank. The bed fall of the channel and its section throughout is good and there is a surplus weir in it to send off all surplus water into the Aliabad main channel at opposite to the "Chakili condam." Provision is also made to make up the tank bund to full height and section and to have the masonry works repaired and an additional weir constructed and the revetment brought up to sufficient height throughout.

The bed of the channel towards its head where the fall is very great is rocky.

The hydraulic details are given separately in the usual form and a sketch of the catchment area attached. Materials for masonry works can be had within a mile except lime alone which has got to come from a distance of about 7 miles.

The works to be done quite in accordance with the standard specification and for this proper rates are allowed.

* Not an imperial tank and may be added to the list if approved of. This tank has already been included in the list of tanks affecting railways.

(Signed) C. R. CHINNASWAMI AIYANGAR,
Sub-Divisional Officer.

4th December 1892.

A width of 4½ feet has been allowed for top of bund. If Superintending Engineer thinks necessary he may increase to 6 feet.

(Signed) A. W. SMART, Major, R.E.,
Executive Engineer.

Future estimates, especially for important tanks or tanks with large water spreads and high bunds, to be not less than 6 feet.

(Signed) J. C. LARMINIE.
Superintending Engineer, IV Circle.

STATEMENT showing the necessary details for transferring the Pushpagiri tank in Polur taluk from the charge of Revenue Department to the charge of the Public Works Department.

Taluk.	No. on the map.	Source of supply.	Name of group or system.	Name of channels.	Name of tanks.	Average cultivation.		Total of Imperial works of each group or system.	
						Area.	Revenue.	Area.	Revenue.
						ACS.	RS.	ACS.	RS.
Polur	474	Rainfed.	Tank group.	...	Pushpagiri tank.	132	650		
								132	650

13th May 1893.

(Signed) J. M. LACEY,
Assistant Engineer in charge.

No. 125 E.I.

Copy submitted to the Chief Engineer for Irrigation with reference to his memo. No. IV/37 N.A., dated 19th April 1893. A statement showing the details for entry in the list of Minor Works, Public Works Department, is herewith forwarded.

25th May 1893.

(Signed) A. W. SMART, Major, R.E.,
Superintending Engineer, IV Circle.

No. 88 I.

Submitted to Government. Though the Pushpagiri tank does not irrigate 200 acres, it is recommended that it be brought on the list of "Minor Works for which neither Capital nor Revenue accounts are kept, P.W.D.," in the North Arcot division, as a special case, as it affects both the Villupuram-Guntakal State Railway and the Aliabad anicut main channel.

OOTACAMUND, 8th June 1893.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

To the Acting Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 17th June 1893, No. 551 I., Public Works.

The following estimate is sanctioned :—

Irrigation.
43. Minor Works and Navigation.
Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.
North Arcot Division.
Original Works.

	RS.
Improving Pushpagiri tank, estimate	1,840

2. This sanction is registered as No. 70 I. of 1893–94.

3. The Pushpagiri tank will be brought on the list of "Minor Works for which neither Capital nor Revenue accounts are kept, P.W.D.," in the North Arcot division as No. 474.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, IV Circle, with plans and estimates.
,, Examiner, Public Works Accounts.
,, Revenue Department.
Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 17th.

Recd. Encl.

G.O., 17th June 1893, No. 551 I.

JUNE.

Pushpagiri Tank

Estimate of Rs. 1,840 for improving — sanctioned, the tank being brought on the list of "Minor Works for which neither Capital nor Revenue accounts are kept, P.W.D.," in the North Arcot division.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers :—

From J. C. LARMINIE, Esq., Superintending Engineer, V Circle, to the Chief Engineer for Irrigation, dated Chepâk, 13th May 1893, No. 146 E.I.

I have the honour to submit, for sanction of Government, accompanying second revised estimate of Rs. 10,618 with accompaniments as per margin for constructing a weir to Allikuli tank in Tiruvallúr taluk of the Chingleput division.

1 copy of No. 79 of 14/16 April 1893, from Sub-divisional officer, Tiruvallúr.
1 statement of labour required for baling water.
1 data for burnt stone in chunam.
1 detail estimate.
1 abstract do..
1 comparative statement.
1 sheet of levels showing earthwork to be done.

The excess of Rs. 3,618 over the first revised estimate of Rs. 7,000 sanctioned in G.O., No. 295 I., dated 21st March 1892, is chiefly due to the increased rate allowed for burnt stone in chunam and to the original provision made for excavating foundation and filling in, &c., being quite out of proportion to the amount actually required. The excess on other items of the estimate is explained in the remark column of the comparative statement.

Work to the value of Rs. 4,320 was carried out during 1892-93. The remaining work will be carried out this year.

Memo. to the Superintending Engineer, V Circle, dated 26th May 1893, No. V/36 C.N.

From J. C. LARMINIE, Esq., Superintending Engineer, V Circle, to the Chief Engineer for Irrigation, dated Chepâk, 1st June 1893, No. 171 E.I.

In accordance with the instructions given in your memo. No. V/36 C.N. of 26th May 1893, I have the honour to report that I have given orders to stop work at the Allikuli tank weir, but in connection therewith I would bring the following facts to your notice :—

1st.—The sanctioned estimate Rs. 7,000 has not yet been exceeded, the expenditure to end of April having been about Rs. 5,010.

2nd.—The second revised estimate as also the design were submitted and sanctioned by Colonel McNeil Campbell and Mr. Walch, respectively, so it is presumed that it is not the general arrangements which are considered to be at fault.

3rd.—The locality is an out-of-the-way one and even on horseback it is difficult of access.

4th.—The chief cause of excess is in the rate for burnt stone, but under the foregoing conditions it is easy to understand how the rate might have been under-estimated ; in fact, the rate provided in the first revised estimate is only Rs. 15-10-0, or nearly Rs. 3 less than similar work could be done for in the cheap district of North Arcot.

5*th*.—Excavation was greatly under-estimated, so certainly regarding both these items Mr. Burlton might have made a better forecast; but in other respects I cannot find that he was guilty of carelessness and both he and Lieutenant Milne have reported that stone is the cheaper material for the locality which being rocky and hilly cannot be well adapted for the manufacture of bricks.

2. Even taking the amount of the revised estimate the difference between wet and dry assessment Rs. 408 (at Rs. 2 per acre) would pay 3·84 per cent. on Rs. 10,618.

4. Under these circumstances I submit, for your decision, if it would not be as well to proceed with the work, building it of burnt stone as proposed.

P.S.—Body and wing walls raised to the height of 11½ feet over flood level and cushion wall finished with concrete; rough stone apron completed with the exception of 270 cubic feet.

No. 89 I.

Submitted to Government.

2. The original estimate was sanctioned in G.O., No. 283 I., dated 21st March 1891, and amounted to Rs. 5,790. This expenditure was supposed to result in a revenue of Rs. 408, giving a return of 7·8 per cent. In the report it was stated that the weir was to be built of rough stone in mortar because it was cheaper than brick in mortar.

3. In G.O., No. 295 I., dated 21st March 1892, a revised estimate of Rs. 7,000 was sanctioned and the excess was due to the substitution of burnt stone in mortar.

4. A second revised estimate is now submitted for Rs. 10,600, the excess of Rs. 3,600 over the first revised estimate of Rs. 7,000 sanctioned in G.O., No. 295 I., dated 21st March 1892, being due to the rate for burnt stone in chunam having been raised from Rs. 15–10–0 to Rs. 22–8–0. The estimate, as thus revised, is recommended for sanction.

5. The proposal to restore this tank appears to have been ill-considered and the ultimate results are anything but satisfactory When the large excess that has now been found necessary was first foreseen, the work should have been stopped altogether until the revised estimate was submitted for sanction. The return now on the project works out to 3·84 per cent., but it is most probable that had the proposal first come forward in its present extravagant form sanction would not have been accorded to the restoration of this tank.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

OOTACAMUND,
8th June 1893.

To the Acting Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 19th June 1893, No. 554 I., Public Works.

The following revised estimate is sanctioned in supersession of the estimate of Rs. 7,000 sanctioned in G.O., No. 295 I., dated 21st March 1892 :—

Irrigation.
43. Minor Works and Navigation.
Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.
Original Works.

	RS.
Constructing a weir to Allikuli tank in Tiruvallur taluk, No. 107, of list of works in Chingleput division, appended to G.O., No. 407 I., dated 6th July 1887, estimate	10,600

2. The attention of the Superintending Engineer is drawn to para. 4 of the foregoing endorsement by the Chief Engineer for Irrigation and he will see that proper care is taken in future in preparing estimates to provide for suitable materials and that the subject of rates for different descriptions of work is carefully investigated.

3. This sanction is registered as No. 71 I. of 1893-94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, V Circle.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 19th.

Recd. *Encl.*

G.O., 19th June 1893, No. 554 I.

JUNE.

Weir

Revised estimate of Rs. 10,600 for constructing a — to Allikuli tank in Tiruvallúr taluk, Chingleput division, sanctioned, and the attention of the Superintending Engineer, V Circle, drawn to the remarks by the Chief Engineer for Irrigation on the large excess on this estimate.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From W. HUGHES, Esq., Superintending Engineer, VI Circle, to the Chief Engineer, Public Works Department, dated Trichinopoly, 8th June 1893, No. 93 P.R.

I have the honour to forward, for the sanction of Government, the completion report for "excavation of main channel, fifth reach," in No. II Periyár division, Periyár project.

2. A sum of Rs. 29,035 was provided for the work in the project estimate and the work was completed in January 1893 at an outlay of Rs. 30,300-2-7 or Rs. 1,266 in excess of the sanctioned amount.

3. The savings in the several items under the sanctioned sub-heads, gravel-cutting, earth-cutting, banking, tamping, &c., amount to Rs. 13,051, while the outlay incurred on the new or additional sub-heads, cutting, soft rock and rock and rock blasting, comes to Rs. 14,317, resulting in an excess of Rs. 1,266. This is attributed to slight alteration in alignment to carry the Shattyar and Marangaliar rivers as superpassages over the main channel instead of as inlets and outlets, to rock of different kinds having been met with in actually executing the work, and also to earthwork carried out in wet soil in Oorsery fields.

4. The completion report has been duly verified by the Examiner of Public Works Accounts, but the excess requires the sanction of Government.

ORDER—dated 19th June 1893, No. 555 I., Public Works.

The Examiner of Public Works Accounts is authorized to pass the expenditure incurred on the work "excavation of main channel, fifth reach," the excess outlay of Rs. 1,266 being met from the balance of the amount available for unforeseen works of the Periyár project, which will then be reduced to Rs. 24,475.

2. This sanction is registered as No. 72 I. of 1893-94.

(True Extract.)

(Signed) J. HANNAN,
Ag. Joint Secy. to Govt., P.W.D.,
General, Buildings and Roads Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle, with one enclosure.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 19th.

Recd. *Encl.*

G.O., 19th June 1893, No. 555 I.

JUNE.

Excess Expenditure

The Examiner authorized to admit the — of Rs. 1,266 incurred on the work "excavation of main channel, fifth reach," Periyár project.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following papers :—

Proceedings of the Board of Revenue (Land Revenue), dated 15th May 1893, Mis. No. 2987.

Read—the following letter from E. TURNER, Esq., Collector of Madura, to the Secretary to the Commissioners of Land Revenue, dated 9th May 1893, No. 137 :—

In continuation of this office letter No. 40, dated 9th February 1893, I have the honour to submit, for favour of Board's orders, an application from Mr. Fischer, No. 74, dated 17th April 1893, together with a translation of the estimate received therewith. It is understood that the matter is pending with the Chief Engineer for Irrigation, Madras.

ENCLOSURE.

From R. FISCHER, Esq., Proprietor of Kondagai Madura, to the Collector of Madura, dated 17th April 1893, No. 74.

I have the honour to state that the Kondagai channel from its head right up to the point where the channels of Silaman and Puliangulam branch off from it—a distance of about two miles—has very much silted up—the accumulation of the last 15 years—and the banks of the channel have also breached in some places and require immediate repair. The flow of water therein is very much obstructed and the tanks do not receive their proper supply notwithstanding all the efforts of the villagers.

I have the honour to submit, herewith, an estimate for Rs. 810-13-4 for thorough repair of the channel and request that you will be good enough to order the payment of Rs. 227-0-7 at an early date to me, the proportionate amount of the estimate in respect of Ayan Silaman and Puliangulam villages.

Resolution—dated 15th May 1893, Mis. No. 2987.

Submitted, for the orders of Government, in continuation of Board's Proceedings, dated 1st March 1893, No. 1437.

(True Copies and Extract.)

(Signed) R. C. C. CARR,
Acting Secretary.

No. 174, Revenue.

Transferred to the Public Works Department (Irrigation) in continuation of endorsement No. 76, dated 7th March 1893.

OOTACAMUND,
30th May 1893.

(Signed) C. A. GALTON,
Secretary to Government.

No. 91 I.

Note by the Chief Engineer for Irrigation.

The undersigned has already instructed the Superintending Engineer, VI Circle, in memorandum No. 16 M.D., dated 28th April 1893, to inform Mr. Fischer that an estimate for putting the channel into thorough order is under preparation in this department and the papers are at his disposal for reference in order that an agreement may be come to in carrying out the work and that petty repairs that Mr. Fischer contemplated carrying out are not, in the opinion of this department, suitable.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

Ootacamund,
9th June 1893.

To the Acting Secretary to Government,
Public Works Department, Irrigation Branch.

Order—dated 19th June 1893, No. 556 I., Public Works.

The note by the Chief Engineer for Irrigation will be communicated to the Board of Revenue. Mr. Fischer will be referred to the Superintending Engineer, VI Circle, for information regarding the proposed repair of the Kondagai channel.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, VI Circle.
„ Revenue Department.

IRRIGATION.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 19th.

Recd. *Encl.*

G.O., 19th June 1893, No. 556 I.

JUNE.

Kondagai Channel

Note by the Chief Engineer for Irrigation regarding the preparation by this department of an estimate for repairs to the — in Madura district, communicated to the Board of Revenue, and Mr. Fischer referred to the Superintending Engineer, VI Circle, for information on the subject of this tank.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following papers:—

From the Resident in Mysore, to the Chief Secretary to the Government of Madras, dated Bangalore, 15th August 1892, No. 2715/287–92.

The Mysore Durbar propose to restore and improve the Baichapur tank in the Goribidnur taluk of the Kolar district. The tank is in the Hindupur tank catchment as will be seen from the enclosed tracing.

2. No information is available as to when this tank breached, but it is reported to irrigate, in its present useless state, some 200 odd acres. It has a catchment of $4\frac{1}{2}$ square miles and a total drainage area of 32 square miles in which there are 20 large and small tanks. The drainage area for a considerable part being hilly and the rainfall copious, there appears to be plenty of water available for storage. It is therefore proposed to restore the ruined tank fixing its weir level at R. L. 62·00, which will make its capacity 540 units * approximately.

* A unit = 10,000 cubic yards roughly.

3. As the tank in question is situated within the limits laid down in item No. 28 of schedule B appended to the irrigation works rules which were accepted in your letter, Political No. 192, dated the 17th March 1892, I have the honour to inquire whether the Madras Government see any objection to the work being undertaken by the Durbar.

4. The Durbar hope that no objections will be raised to the project which has been strongly recommended by the District officers as likely to prove very beneficial to the Mysore State.

No. 1358, Political.

Transferred to the Public Works (Irrigation) Department.

22nd August 1892.

(Signed) J. F. PRICE,
Chief Secretary.

Memo to the Superintending Engineer, III Circle, dated 24th August 1892, No. III/16 B.L.

From Colonel A. T. FRASER, R.E., Superintending Engineer, III Circle, to the Chief Engineer for Irrigation, dated Bellary, 13th February 1893, No. 3075.

In reply to your No. III/16 B.L., dated 24th August 1892, I have the honour to forward a letter from the Head Assistant Collector of Anantapur, dated 14th October last, in which he points out the succession of the Baichapur and Melapalli tanks, after which comes the Kotapi (and other tanks) in British territory.

2. The Kotapi tank (shrotriem) and two below depended upon a stream—the Pandi Vanka—which used to run separate from the Melapalli tank, but in repairing and enlarging this of late years the Mysore authorities made the stream flow into Melapalli tank instead of past it.

3. The water being thus intercepted, it has become almost a matter of indifference whether the Baichapur tank above is restored or not.

4. I am of opinion that the restoration of a tank to its former state cannot be very well objected to.

5. The Head Assistant is however not sure if permission was given to make more of the Melapalli tank than it was originally.

ENCLOSURE.

From A. T. PITT, Esq., Acting Head Assistant Collector, Anantapur, to the Collector of Anantapur, dated Madakasira, 14th October 1892, No. 716.

With reference to your reference on current No. 364 of 14th September 1892, forwarding for report papers concerning the proposed repair of Baichapur tank by the Mysore Durbar, I have the honour to report as follows after personal inspection of the tanks in British territory likely to be affected by the restoration of the tank in question.

2. There are several tanks forming a sort of chain, the water from the discharge weir from one tank being the principal supply to the tank immediately below.

The tanks are—

Baichapur	(Mysore).
Melapalli	(do.)
Kotapi	(British) shrotriem tank.
Pulumati	(do.) do.
Srikantapuram	(do.) major Government tank.

3. The ryots interested in the last three tanks object to the repair of Baichapur tank on the ground that it would stop the flow of a vanka called the Pandi Vanka which runs through all the tanks in the chain and has a natural and defined course, the breadth of which shows that the water which passes in it at times is of considerable volume. I traced this vanka from Srikantapuram tank as far as Melapalli tank (Mysore).

4. At Melapalli the following information was given me by the Mysore and British ryots present regarding Baichapur tank. It has been breached (they say by the same Pandi Vanka in flood) so long ago that even the "ancient inhabitant" cannot remember the occurrence. The tank bed is under cultivation and the Pandi Vanka flows through the breach in the bund.

5. The Pandi Vanka used to flow past Melapalli tank straight to Kotapi tank in British territory to which it must have been a considerable source of supply. Except for this the tank depends on rain. The water from the discharge weir runs in a vanka bed to Pulumati tank and its discharge in the same way to Srikantapuram. It is clear that if the flow of the vanka were stopped higher up the tanks Pulumati, Kotapi and Srikantapuram would be injuriously affected.

6. But the question does not rest here, but mainly depends on what is to be done as regards the action of the Mysore Durbar in repairing and enlarging the Melapalli tank in their territory, which work they have already completed last year.

7. From what the Mysore and British ryots have told me personally it appears that the Pandi Vanka formerly ran parallel to and outside (not through) the bund of the Melapalli tank, so that it was not checked at all here and emptied itself in full volume into the Kotapi tank (British). The repairs to the Melapalli tank (completed already) consist in an elongation of the bund so as to stop the said Pandi Vanka altogether. In fact almost a new tank has been constructed and instead of the vanka itself going on to Kotapi all this tank gets is the water discharged over the new weir of Melapalli tank. It is clear that by executing such a work the Mysore authorities have interfered with a stream which ran in a natural and defined course to Kotapi tank so as to seriously diminish the supply of water to which the ryots interested in Kotapi tank had either a natural right, *i.e.*, if their right existed before Baichapur tank was breached, or a prescriptive right if the right accrued only after the breach in the Baichapur tank.

8. The ryots of Kotapi say they strongly objected to the repairs of Melapalli tank, but I have not been able to ascertain (1) whether the Mysore Durbar ever asked the British Government whether any objection existed to their repairing the said tank, or (2), if so, whether the

British Government objected or not. As the repairs were only completed last year (a year of insufficient rainfall) the injury to the British tanks will only now be apparent.

9. The repairs to the Baichapur tank now proposed will only have the same effect as the repairs to the Melapalli tank on the supply of water to the British tanks. If therefore the British Government have acquiesced in the enlargement and repair of Melapalli tank it is useless to object to the repair of Baichapur tank as the mischief is already done. If, however, the Mysore Durbar repaired the former tank without reference to the British Government (which reference ought to have been made according to the rules which have necessitated the present reference about the Baichapur tank) this matter is the one to be settled.

10. I am not aware whether the fact that Kotapi and Pulumâti tanks are shrotriem tanks will affect the action of Government in this matter.

Dis. No. 596.

Forwarded to the Executive Engineer, Bellary Division, with reference to his endorsement No. 2259, dated 5th September 1892, on the Superintending Engineer's No. 1696, dated 31st August 1892.

2. The sketch map received with the above is herewith returned.

3. It will be seen that the evil has already been done by the restoration of the Melapalli tank.

ANANTAPUR,
27th October 1892.

(Signed) T. RUNGA ROW,
for Collector.

ORDER—dated 19th June 1893, No. $\frac{556}{A}$ I., Public Works.

Ordered that the Resident in Mysore be addressed in the Political Department.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Political Department, with draft letter.
„ Chief Engineer for Irrigation, with letter.

IRRIGATION.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 19th.

Recd. *Encl.*

G.O., 19th June 1893, No. $\frac{556}{A}$ I.

JUNE.

Baichapur Tank

Ordered that the Resident in Mysore be addressed through the Political Department on the subject of the restoration of — in Mysore territory.

PUBLIC WORKS DEPARTMENT.

Irrigation.

No. 399, Political.

Letter—from

The CHIEF SECRETARY to the GOVERNMENT of MADRAS,

To

The RESIDENT in MYSORE.

Sir,

With reference to your letter No. 2715/287-92, dated 15th August 1892, I am directed to state that the subject of restoring the Baichapur tank in the Mysore territory was referred to the Superintending Engineer, III Circle, who, with his letter No. 3075, dated 13th February 1893, forwards a letter No. 716, dated 14th October 1892, from the Head Assistant Collector of Anantapur upon the question. This officer, after personal inspection of the locality, brings to notice the prejudicial action of the officials of the Mysore Government in having in the year 1891 extended the bund of the Melapalli tank, second in the series below Baichapur tank, across a well defined "vanka" or drainage that used to flow to the Kotapi and subjacent tanks and formed their main source of supply. This was apparently done before the limitation schedule printed with G.O., No. 162 I., dated 18th February 1892, was drawn up. The action of the Mysore Government was clearly prejudicial to the interests of the tanks above referred to lying in British territory. This Government therefore cannot accept the further interference by Mysore Government with the supply to these tanks which the restoration of Baichapur tank now asked for would involve. The restoration of this tank would practically amount to the utilization of all the rainfall off the catchment basin above the Manapalli tank and place the tanks lying below in a still worse condition than at present.

2. Under these circumstances, this Government regrets that it cannot accord its consent to the restoration of the tank in question.

I have the honour to be,
Sir,
Your most obedient servant,

(Signed) J. F. PRICE,
Chief Secretary.

Ootacamund,
22nd June 1893.

Exd. A. D. Xavier.
Spare Copies

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper:—

From J. C. LARMINIE, Esq., Superintending Engineer, V Circle, to the Chief Engineer for Irrigation, dated Cuddalore, 5th June 1893, No. 176 E.I.

In accordance with your memo. V/71 S.A. of 24th December 1892 the estimate of Rs. 2,800 for constructing four masonry dams across Manambathan channel of the Shatiatope anicut system was sanctioned locally by the Superintending Engineer.

The Examiner having raised objection to the above procedure in his letter No. 1195 C., dated 10/13th April 1893 (copy enclosed), I have the honour to submit the estimate for sanction of Government.

ENCLOSURE.

REPORT to accompany the estimate for constructing four masonry dams on Manambathan channel.

	RS.
Amount of estimate	2,800

During the past two years the Manambathan channel has been considerably improved at a cost of nearly Rs. 10,000. Its bed and banks were put in thorough good order; but, owing to mud dams, &c., the lower half of the channel is fast being silted up again. Besides much complaint was made last year that, owing to the improved conditions of the channel, great difficulty was experienced in maintaining the mud dams. It is, therefore, now proposed to construct permanent masonry dams along the lower half of the channel exactly like those on the upper half, except of smaller width, to suit the reduced size of the channel towards its end. Four new dams are provided for as below:—

1st. Sunthapettai dam, 9th mile,
2nd. Kuriamungalam dam, 10th mile,
3rd. Velangipett dam, 11th mile, and
4th. Thatchakadu dam, 13th mile.

All the above are to take the place of authorised mud dams in accordance with the sanctioned morais or turns.

The Manambathan channel is the largest and most useful of the main channels in Shatiatope anicut system. It is 17½ miles long and irrigates in round numbers 8,000 acres.

(Signed) J. D. LEGGE,
Assistant Engineer.

PORTO NOVO,
17th August 1892.

ORDER—dated 19th June 1893, No. 557 I., Public Works.

The following estimate is sanctioned in supersession of the sanction accorded to the estimate by the Superintending Engineer, V Circle :—

Irrigation.
43. Minor Works and Navigation.
Minor Works for which Capital and Revenue Accounts are kept.
Capital Account.
Shatiatope Anicut System.
I. Works.
3. Distributaries.
Manambathan Channel.
3. Works.

	RS.
Constructing four masonry dams—	
Estimate	2,800
Establishment	644
Tools and plant	56
Total ...	3,500

2. This sanction is registered as No. 73 I. of 1893–94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
,, Superintending Engineer, V Circle,
with plan and estimate (4).
,, Examiner, Public Works Accounts.
,, Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 19th.

Recd. *Encl.*

G.O., 19th June 1893, No. 557 I.

JUNE.

Masonry Dams

Estimate of Rs. 3,500 for constructing four — across Manambathan channel, Shatiatope anicut system, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following papers :—

G.O., dated 10th February 1893, Mis. No. 167 M., Local and Municipal.

Read—the following paper :—

From the Chairman, Municipal Council, Palni, dated 18th January 1893, No. 14.

With reference to G.O., dated 10th November 1892, No. 1845 M., I have the honour to report that the Council have resolved to set apart the Vaiyapuri tanks for drinking and bathing purposes and to resort to prosecution for preventing men and cattle from fouling the water as well as the bed in any manner.

2. Those who allow their cattle or pigs to stray into public latrines are prosecuted under the Act.

3. With reference to para. 3 of the order, I beg to report that the accumulation of rubbish in the tank-bed has been removed already and that the Collector has been requested to acquire a piece of ground to the east of the town for a night-soil depôt.

4. The Council's resolution on the subject is herewith submitted.

ENCLOSURE.

PROCEEDINGS passed by the Municipal Council, Palni, at a meeting held on the 16th Jan. 1893.

* * * * *

No. 207. Read Inspection notes of the Deputy Sanitary Commissioner, Madras, and the Order of Government thereon, dated 10th November 1892, No. 1845 M.

1. The Council resolves to set apart the Vaiyapuri tanks for drinking and bathing purposes under section 154 of the Act, as it cannot prevent pilgrims from bathing on account of its sacred character, and prosecution will be resorted to for preventing men and cattle from fouling the place and prohibiting the storing of cow-dung, making of bratties, &c. At the same time the Council would request the Public Works officers to prevent nuisances in the course of the supply channel and also arrange for a surplus weir at the northern end of the tank that would scour out all sediments as one existed previously. At present the sediments in that part of the tank are nauseating.

2. Owners of pigs, &c., who allow them to stray into latrines, are prosecuted under the Act.

3. Arrangements are made for acquiring site for night-soil depôt.

Order—dated 10th February 1893, Mis. No. 167 M., Local and Municipal.

Recorded.

2. The latter part of the first paragraph of the Council's Proceedings will be considered in the Public Works Department.

(True Extract.)

(Signed) A. T. PRINGLE,
Assistant Secretary.

Memo. to Chief Secretary, Local and Municipal Department, dated 14th Feb. 1893, No. 13 W.

From the Chairman, Municipal Council, Palni, to the Chief Engineer for Irrigation (through the Sub-Collector and Collector of Madura), dated 1st March 1893, No. 421.

With reference to your letter No. 13 W., dated 14th February 1893, communicated to me in G.O., Mis. No. 216 M.,, dated 18th February 1893, I have the honour to inform you that the Council has resolved that, as it is too poor to pay for the weir, the Public Works Department be requested to execute the work from their funds and request that the Council's prayer be complied with.

2. Copy of Council's resolution is herewith forwarded.

ENCLOSURE.

PROCEEDINGS passed by the Municipal Council, Palni, at a meeting held on the 27th Feb. 1893.

No. 240. Read G.O., dated 18th February 1893, Mis. No. 216 M., communicating letter from the Chief Engineer, stating that the Superintending Engineer, VI Circle, has been asked to prepare an estimate for an additional weir for Vaiyapuri tank and presuming that the cost thereof will be borne by the municipality.

The Council is too poor to pay for the proposed weir and it is resolved that the Public Works Department be asked to execute the work from their own funds.

Forwarded.

PERIYAKULAM,
6th March 1893.

(Signed) L. C. MILLER,
Ag. Sub-Collector.

No. 71.

Forwarded.

MADURA,
13th March 1893.

(Signed) E. TURNER,
Collector.

To the Superintending Engineer, VI Circle, dated 15th March 1893, No. VI/11 M.D.

From A. H. GARRETT, Esq., Executive Engineer, Madura Division, to the Superintending Engineer, VI Circle, dated 17th May 1893, No. 120 S.E.

With reference to your No. 1181, dated 16th February 1893, and subsequent endorsements herewith returned, I have the honour to state I do not consider that any money should be spent by Government in carrying out the proposals of the Palni Municipality.

2. The Council seem to think that a scouring sluice would have the effect of purifying the tank water, so that it would be more suitable for drinking purposes.

3. They contend, moreover, that, as a large quantity of silt would be removed by the sluice, the tank would benefit and that Government should accordingly pay for the work.

4. The Vaiyapuri tank is a very large one irrigating more than 600 acres and the construction of a scouring sluice could have no effect on the quality of the water.

5. The cost of such a sluice would be considerable and out of all proportion to any possible benefit the tank might derive from the removal of silt.

No. 200 M.D.

Copy submitted to the Chief Engineer for Irrigation with reference to his No. VI/11 M.D., dated 15th March 1893. There is a powerful scouring sluice in the supply channel a little above where it enters the tank and ample means of disposing of surplus from the tank are provided by a long weir at its lower end. The interests of Government would in no way be benefited by the scouring sluice proposed by the municipality, and, if I am not mistaken, there are stronger objections to its construction than stated by the Executive Engineer, as (1) water from the sluice would flow over the nunjei between the tank and the Shanmuganadi river, and (2) if it were allowable to use the sluice at all it could only be used after providing for the filling of the chain of tanks which are supplied by water passing over the existing weir and through the sluice in it.

2. The temple hill where pilgrims congregate, and the town itself, drain into the tank. It has been already long ago suggested to the municipality that the only way to prevent the fouling of the tank is to make a bund or drain or both through the shallow part of the tank bed to intercept all local drainage and lead it to the surplus channel of the tank by which it would be conveyed to the next tank of the chain. I do not know whether this work has been estimated for. It would of course be expensive as there would be a good deal of masonry where the drain would skirt the town.

TRICHINOPOLY,
1st June 1893.

(Signed) W. HUGHES,
Suptg. Engr., VI Circle.

No. 92 I.

Submitted for the information of Government.

2. The undersigned concurs in the opinion expressed by the Superintending Engineer in para. 1 of his endorsement No. 200 M.D., dated 1st June 1893, that the interests of Government would in no way be benefited by the construction of scouring sluices to the Vaiyapuri tank as proposed by the Palni Municipality.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R E.,
Chief Engineer for Irrigation.

OOTACAMUND,
10th June 1893.

To the Acting Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 19th June 1893, No. 558 I., Public Works.

The Government considers that its interests would in no way be benefited by the construction of a scouring sluice to the Vaiyapuri tank as proposed by the Palni Municipality, and is therefore unable to sanction its construction.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, VI Circle.
„ Local and Municipal Department.
„ Revenue Department.

IRRIGATION.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 19th.

Recd. *Encl.*

G.O., 19th June 1893, No. 558 I.

JUNE.

Vaiyapuri Tank

Declining to sanction the construction of a scouring sluice to the —, Madura district.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers:—

From W. HUGHES, Esq., Superintending Engineer, VI Circle, to the Chief Engineer for Irrigation, dated Trichinopoly, 29th May 1893, No. 180 M.D.

I have the honour to submit, for your approval and sanction of Government, an estimate, amounting to Rs. 5,430, accompanied by plan and report, for extending the anicut across the Vyravanar and constructing a head sluice to the channel therefrom. The anicut is numbered one in Colonel Pennycuick's notes printed with G.O., No. 324 I. of 10th April 1891.

2. The area drained by the river is only $10\frac{3}{4}$ square miles and the maximum discharge probably 2,900 cubic feet per second, but to this has to be added 1,600 cubic feet per second of Periyár water which will not be shut off during floods in the Vyravanar unless it is known that the Suruliyár or the Vaigai is also in good fresh. The river bed above the anicut is silted to above anicut crest level in consequence of the practice alluded to in Colonel Pennycuick's notes and below the anicut the river is very narrow. The flood level under present conditions is not known as there has been no heavy flood since the anicut was built nor is it possible to calculate what the highest flood level will be in future owing to the irregularity in section of the river and to the absence of data for estimating the effect of the passage of Periyár water in enlarging it. Allowing for improvements which it is proposed to carry out and those which the water is likely to effect of itself it is considered safe to take the flood level at 5 feet above crest. It will be seen from the survey and levels that the river is in need of training for some distance above the anicut. This and the excavation of a channel through its bed to the head sluice will be carried out from maintenance estimates. The present estimate includes a lump sum of Rs. 500 for widening the river for a short distance in rear of the anicut.

3. The design for the anicut work is in general accordance with Colonel Pennycuick's recommendations as to the dimensions and level of the scouring sluices. The class of work proposed is much superior to that in the old anicut; as the sluices will be open for nine months in the year it is thought that nothing but first-class work would stand the scour.

4. The plan and estimate for the head sluice were called for in the Chief Engineer's memorandum, dated 16th August 1892, with which the Irrigation Chief Engineer's note, dated 12th August 1892, was also communicated. The sill is fixed at $2\frac{1}{2}$ feet below crest of anicut. The channel requires clearing for some distance and I think they should be done once at the cost of Government as the silting is due to defects in the head works.

ENCLOSURE.

REPORT to accompany estimate for extending the Vyravanar anicut and constructing a head sluice (Imperial No. 50).

	RS.
Estimate	5,430

This estimate has been prepared in general accordance with the instructions of the Chief Engineer, Periyár Project, dated 4th July 1890.

2. The present anicut is a Tank Restoration Scheme work, 125 feet in length, and was built to take the place of an old anicut, 62 feet long, about 350 feet lower down the river.

3. In the Tank Restoration Scheme estimate it was calculated that during the maximum discharge of the river there would be a depth of water over anicut crest of 3 feet, but from inquiries made it is believed that the discharge was under-estimated by the Tank Restoration Scheme officers and it is considered safer to allow for a depth of 5 feet * over the anicut crest.

* The river below the anicut is narrow and there is little overfall at the anicut in floods. The flood level cannot be calculated; 5 feet on crest is thought to be nearly correct.

(Signed) W. HUGHES,
Suptg. Engr., VI Circle.

4. The anicut channel is much silted, and, if it is decided it should be cleared at the expense of Government, an estimate will be prepared.

(Signed) A. H. GARRETT,
Ex. Engr., Madura Division.

24th April 1893.

No. 93 I.

Note by the Chief Engineer for Irrigation.

The Vyravanar anicut across the Suruliyár river was built from Tank Restoration Scheme funds a few years ago. Before its construction the villagers diverted water by means of a corumbu. There were no remissions of revenue and the system answered fairly well. The anicut was built to replace an old, ruined anicut at the request of the Revenue Department, but no head sluice was provided nor scouring sluices in the body wall. The result is excessive silting, and to remedy this and to pass on Periyár water the Superintending Engineer submits plans and estimates, amounting to Rs. 5,430, for improving the anicut, providing scouring sluices and for a head sluice. The amount is recommended for sanction. The present estimate includes a lump sum of Rs. 500 for widening the river for a short distance in rear of the anicut. The work proposed is partly for the benefit of the Periyár project, to which, according to G.O., No. 324 I., dated 10th April 1891, page 10, para. 4, a part of the cost should be charged. However in G.O., No. 25 I., dated 9th January 1891, an estimate for the improvement of another anicut on the same river under similar circumstances was sanctioned from 43. Minor Works and Navigation and the precedent then established may be followed.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

OOTACAMUND,
10th June 1893.

To the Acting Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 19th June 1893, No. 559 I., Public Works.

The following estimate is sanctioned:—

Irrigation.
43. Minor Works and Navigation.
Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.
Madura Division.
Periyakulam Taluk.
Suruliyár Minor Basin.
Original Works (Major).

	RS.
Extending the anicut across the Vyravanar, providing scouring sluices and constructing a head sluice, estimate	5,430

2. This sanction is registered as No. 74 I. of 1893-94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle, with plan and estimate (3).
" Examiner, Public Works Accounts.
" Revenue Department.
Editors' Table.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 19th.

Recd. *Encl.*

G.O., 19th June 1893, No. 559 I.

JUNE.

Vyravanar Anicut

Estimate of Rs. 5,430 for extending the —, Periyakulam taluk, Madura district, and for providing scouring sluices and constructing a head sluice, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following papers :—

From W. J. H. LE FANU, Esq., Collector of North Arcot, to the Secretary to the Commissioner of Revenue Settlement, Land Records and Agriculture (through the Chief Engineer for Irrigation), dated 26th October 1892, Ref. on No. 6036 Gl. Eng.

The ryots of Vaniyanoor village, No. 96 of Polur taluk, state that this tank which is capable of irrigating acres 118·91 of wet land, assessed at Rs. 600–8–0, is purely a rainfed tank and has no other source of supply and that it rarely gets full even in ordinary years. In the last two faslis remissions were granted as noted in the margin. The ryots request that a supply channel may be dug from the Elathoor tank, a major work in charge of Public Works Department (*vide* No. 219 in the list of Imperial works).

	RS	A.	P.
Fasli 1300	225	4	0
„ 1301	377	1	0
Total ...	602	5	0

2. The General Duty Deputy Collector, who was asked to report on the petitioners' proposal, states that the tank in question is a minor one, hardly receiving sufficient supply to irrigate the whole of its ayacut, and that, if the proposed supply channel is dug and its supply improved, a further extent of 92 acres, being cultivable lands classed as poramboke, and 42·73 acres of dry unoccupied waste will be brought under cultivation. The entire extent of the poramboke, which is classed as "jungle poramboke," is 214·11 acres, of which 60 acres have been reserved for forest purposes, and, of the remaining extent, 92 acres are reported to be fit for wet cultivation, the rest being rocky and the ground uneven. It is also stated that the portion of the poramboke recommended to be allotted for cultivation is not required for commercial purposes. These 92 acres of poramboke lands will yield a revenue of Rs. 322, the rate of assessment being Rs. 3–8–0 per acre. The other 42·73 acres of dry unoccupied waste land, whose dry assessment is only Rs. 32–11–0, will, when converted into wet, yield an assessment of Rs. 129–8–0. The expected increase by the proposed transfer of the tank to the Imperial list of works will be 134·73 acres with an assessment Rs. 451–8–0.

3. The Sub-divisional officer, Arni, who was consulted by the Deputy Collector on the subject, states that it is quite feasible to dig a supply channel to the tank in question from the Elathoor tank, and that to carry out this project it is necessary first to have the tank transferred to the list of Imperial works. This tank is of six months' capacity and belongs to the third class. As its supply will be greatly improved and an increase of revenue, amounting to Rs. 451–8–0, is likely to accrue, I have the honour to request that the Board will be pleased to obtain the sanction of Government for the transfer of the tank to the list of Imperial works to enable the Public Works Department to dig a supply channel to it from the Elathoor tank.

4. A statement showing the anticipated increase of revenue is sent herewith.

Endorsement to the Secretary to the Commissioner of Revenue Settlement, Land Records and Agriculture, dated 20th March 1893, No. 165 M.

Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), dated 6th April 1893, Mis. No. 1896.

From J. HEWETSON, Esq., Acting Collector and District Magistrate, North Arcot, to the Chief Engineer for Irrigation (through the Superintending Engineer, IV Circle), dated Walaja, 20th May 1893, Ref. on No. 2909 Gl. Eng.

Adverting to para. 2 of Board's Proceedings, dated 5th April 1893, Mis. No. 1896, I have the honour to furnish the following information regarding the Vaniyanoor tank in Polur taluk:—

(1) Source of supply of the tank—purely rainfed tank; surface drainage over a large area.
(2) The average revenue under it, Rs. 501.
(3) The area irrigated by it, 107 acres.

No. 132 E.I.

Forwarded.

(Signed) A. W. SMART, Major, R.E.,
Superintending Engineer, IV Circle.

27th May 1893.

No. 90 I.

Submitted to Government with a recommendation that the Vaniyanoor tank in the Polur taluk of the North Arcot district be transferred to the list of "Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D." and numbered "219-A."

OOTACAMUND, 9th June 1893.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

To the Acting Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 20th June 1893, No. 561 I., Public Works.

The proposal of the Chief Engineer for Irrigation is approved.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, IV Circle.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 20th.

Recd. *Encl.*

G.O., 20th June 1893, No. 561 I.

JUNE.

Vaniyanoor Tank

Proposal of the Chief Engineer for Irrigation to transfer —, in Polur taluk, North Arcot district, to the list of " Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D." and numbered " 219-A " approved.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

No. 95 I.

Note by the Chief Engineer for Irrigation.

The accompanying two statements which compare the expenditure incurred on Irrigation, Navigation and Agricultural works during 1892–93 with the final grants for the year are in accordance with G.O., No. 141 W., dated 13th January 1883, submitted to Government.

2. The figures of expenditure which have been checked by the Examiner, Public Works Accounts, are not final as the annual accounts have not yet been closed.

3. The total expenditure from "Imperial" funds amounted to Rs. 33,08,777 and that from "Provincial" to Rs. 31,89,242 against the final grants of Rs. 33,89,000 and Rs. 33,59,000, respectively. Out of a grant of Rs. 22,000 under "Local Irrigation Cess fund" only Rs. 18,944 were spent.

4. The following table contrasts the grant and expenditure under each budget head:—

	Grant. RS.	Expenditure. RS.
Imperial.		
35. Protective Works, Irrigation	4,98,000	4,95,345
42. Major Works (Working Expenses) ...	12,31,000	11,87,247
49. Capital Expenditure not charged to Revenue	16,60,000	16,26,185
Total ...	33,89,000	33,08,777
Provincial.		
43. Minor Works and Navigation	33,59,000	31,89,242
Local.		
43. Minor Works and Navigation	22,000	18,944
Grand Total ...	67,70,000	65,16,963

The total lapse including the large one of Rs. 1,29,135 on works under the Revenue Department (see para. 9) appears as 3·7 on the whole grant, but this will be considerably reduced by the adjustments yet to be made.

5. 35. *Protective Works, Irrigation.*—The grant for the Rushikulya project was closely worked up to; the small lapse of Rs. 1,246 under *works* is due to excessive rain having retarded progress on the Russellkonda reservoir works.

6. 42. *Major Works (Working Expenses).*—A sum of Rs. 4,900 paid for land compensation by the Tahsildar of Rámachandrapuram taluk has not yet been adjusted. This accounts for the short outlay in the Gódávari Eastern division under "Maintenance and repairs." The outlay incurred under this head in the Kistna Eastern and Western divisions slightly exceeded the grants owing to unavoidable circumstances. Of the grant for "Maintenance and repairs" to the Kurnool-Cuddapah canal, Rs. 37,250 have been reserved for payment to the Telegraph Department on account of the telegraph line along the canal ordered to be dismantled and for the annual maintenance and supervision of the line. This payment has still to be adjusted.

7. *Capital Expenditure not charged to Revenue.*—The lapse in the total grant for the Gódávari delta system is said to be due to non-payment of land compensation by the Revenue Department. Rs. 5,167 of the short outlay on the Kistna delta system will, it is said, be adjusted in the supplemental accounts. The balance of the short outlay is attributed to an abnormal fresh in the river which came down about the 12th March and remained above crest of anicut till 3rd April, which stopped all work on widening the head of the Kistna Western delta main canal, and also to considerable delay on the part of the Revenue Department in handing over land required for the straight cut at Buddam on the Tungabhadra drain and to the prevalence of cholera in the surrounding villages. The outlay on the Sangam anicut system in the Nellore division fell short of the grant owing to non-adjustment of land compensation which, it is stated, will be advised for inclusion in the supplemental accounts. Owing to the adjustment of stock issues to works carried out during the month of March 1893 and advances to laborers, the grant for the Periyár No. I division was exceeded by Rs. 3,803. The provision made for payment of land compensation in the No. II Periyár division was not fully utilized. The Superintending Engineer, VI Circle, states that the unspent balance will be reduced after the necessary adjustment of payments in the Revenue Department for land compensation have been carried out in the supplemental accounts. Rs. 800 being the cost of shutters, &c., supplied by the Public Works Stores to this division remains to be adjusted.

8. *Provincial*, 43. *Minor Works and Navigation.*—Generally the grants under this head have been very closely worked out. The principal variations between grants and expenditure are briefly noticed below:—

Owing to bills expected not having been received for payment, a short outlay of Rs. 4,119 occurred on works executed on Capital account of the Pálár anicut system in the North Arcot division. Rs. 3,142 of the grant for Revenue Minor "Extensions and improvements" to the Poiney anicut system in the same division was not utilized because bills were not submitted before the official year closed. If work done could not be billed for in time, the balances of grant should have been promptly surrendered and not allowed to lapse.

The allotment for "Maintenance and repairs" to the Védáranniyam canal in the Negapatam division was fully spent; the short outlay shown in the statement is attributed to the write-back to "Local" funds of Rs. 2,315, being a moiety of the difference between the traffic receipts and the cost of the maintenance of the canal.

The apparent short outlay of Rs. 12,225 in the Kurnool division on repairs to "Minor works for which neither Capital nor Revenue accounts are kept" is due to the outlay of Rs. 10,994 incurred on works of the Revenue Department executed by the Public Works Department shown in column 29 of statement A having been incurred in the first instance against the grant provided for Public Works Department works. The allotment of Rs. 10,000 to cover the outlay on the Revenue Department works was sanctioned by the Board of Revenue only on the 29th March 1893—Proceedings No. 1837—when it was too late in the year to spend on Public Works Department works the amount set free by the allotment made by the Board of Revenue. Similarly the apparent short outlay of Rs. 7,926 and Rs. 11,955 under original works and repairs, Tank Restoration works, in the Chingleput division, is due to the outlay of Rs. 8,173 and Rs. 11,788 having been incurred against the grant for Public Works Department works on original works and repairs, Minor works,

Revenue Department; but in this case no allotments were sanctioned by the Board of Revenue from the grant at its disposal. In the case of the expenditure incurred by the Public Works Department on "Minor works, Revenue Department," in the Nellore division, the allotment applied for was not sanctioned by the Board of Revenue.

Rs. 3,529 or nearly half the grant for repairs to Tank Restoration works in the Kistna Western division was not utilized through want of labour at the latter end of the year owing to the prevalence of cholera.

The grants for the Kistna Eastern and Western divisions and the Coimbatore division under repairs to Agricultural works were slightly exceeded.

9. Out of Rs. 3,64,042, the portion of the grant for expenditure by the Revenue Department, * the very large sum of Rs. 1,29,135 is shown to have lapsed. This amount may be reduced when the accounts of the year are finally closed, but the causes of short outlay cannot be ascertained as the review by the Board of Revenue of the expenditure incurred under this head has not yet been received.

* Rs. 35,958 of the total grant (Rs. 4 lakhs) were to be expended by Public Works Department agency.

10. *Local*, 43. *Minor Works and Navigation.*—The short outlay in the Bellary division is attributed to the failure of piece-work contractors employed on the Thoorta and Ramsagar channel improvements.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

14th June 1893.

Enclosures.

A.—Statement showing by divisions the grants for and expenditure incurred on original works and repairs under Irrigation, Navigation and Agricultural works during 1892–93.

Divisions.	Imperial.								Provincial, 43. Minor Works and Navigation.					
	35. Protective works, Irrigation.		42. Major works (Working expenses).				49. Capital expenditure not charged to Revenue.		Minor works for which Capital and Revenue accounts are kept.					
			Extensions and improvements.		Maintenance and repairs.				Capital account.		Revenue account.			
											Extensions and improvements.		Maintenance and repairs.	
	Grant.	Outlay.	Grant.	Outlay.	Grant.	Outlay.	Grant.	Outlay.	Grant.	Outlay.	Grant.	Outlay.	Grant.	Outlay.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	16
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
1. Rushikulya	4,07,305	4,06,059	..	..	8,000	7,856	..	..	..	..	..	..	..	..
2. Ganjám	..	..	..	..	..	..	..	..	300	294	..	..	800	774
3. Vizagapatam	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4. Gódávari Eastern	..	..	14,676	14,702	1,04,200	1,00,000	2,342	791	..	..	..	..	..	..
5. Do. Western	..	..	22,686	22,149	1,52,000	1,51,619	1,808	402	..	..	..	..	..	..
6. Kistna Eastern	..	..	7,000	5,893	78,200	80,736	31,331	29,367	..	..	..	..	..	..
7. Gudiváda	..	..	3,400	3,395	42,000	41,938	80,000	76,797	..	..	..	..	..	..
8. Kistna Western	..	..	4,883	4,021	89,480	92,743	1,43,943	1,36,320	15,000	15,775	..	..	..	..
9. Nellore	..	..	11,244	10,696	56,500	56,105	18,320	17,692	..	..	..	..	..	..
10. Buckingham canal	..	..	..	..	..	..	..	..	1,47,567	1,47,705	3,649	3,421	80,000	83,292
11. Cuddapah	..	..	..	..	..	..	..	..	55,000	54,570	..	..	..	..
12. Kurnool	..	..	7,272	5,888	1,17,500	81,859	..	..	1,400	1,322	— 46	— 46	5,000	5,329
13. Bellary—Bellary District	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Anantapur	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14. West Coast	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15. Coimbatore	..	..	..	..	..	..	..	..	2,105	813	714	584	6,140	6,352
16. Salem	..	..	2,000	820	2,390	2,406	2,157	2,099	..	..	..	..	..	..
17. North Arcot	..	..	..	..	..	..	..	..	16,301	12,182	64,400	60,031	61,000	60,653
18. Chingleput	..	..	..	..	..	..	..	..	3,000	3,000	5,560	5,560	15,997	15,907
19. South Arcot	..	..	..	..	..	..	..	..	13,500	13,500	11,804	11,776	61,261	61,324
20. Tanjore	..	..	13,445	13,198	30,746	31,054	..	..	..	..	1,005	1,006	2,700	2,699
21. Negapatam	..	..	9,430	8,987	23,000	22,991	..	..	..	..	..	..	5,500	3,142
22. Trichinopoly	..	..	432	432	8,500	8,497	..	..	..	..	..	..	..	..
23. Madura	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24. Tinnevelly	..	..	3,892	3,892	13,500	13,267	..	..	..	..	2,000	1,930	9,500	9,494
25. No. I Periyár	..	..	..	..	..	..	7,64,140	7,67,943	..	..	..	..	..	..
26. „ II „	..	..	..	..	..	..	2,24,194	2,12,252	..	..	..	..	..	..
27. Tank Restoration—Central office	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28. Adjustment of old maintenance charges.	..	..	— 4,261	— 4,261	— 1,36,586	— 1,36,586	..	..	..	..	— 6,120	— 6,120	— 6,264	— 6,264
Total	4,07,305	4,06,059	96,099	89,811	5,89,430	5,54,485	12,68,235	12,43,663	2,54,173	2,49,161	82,966	78,142	2,41,634	2,39,702
Revenue Department	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	4,07,305	4,06,059	96,099	89,811	5,89,430	5,54,485	12,68,235	12,43,663	2,54,173	2,49,161	82,966	78,142	2,41,634	2,39,702

A.—Statement showing by divisions the grants for and expenditure incurred on original works and repairs under Irrigation, Navigation and Agricultural works, &c.—*cont.*

Provincial, 43. Minor Works and Navigation—*cont.*

Divisions.	Minor works for which neither Capital nor Revenue accounts are kept, P.W.D. — Original works. Grant.	Original works. Outlay.	Repairs. Grant.	Repairs. Outlay.	Tank Restoration works. Investigation. Grant.	Investigation. Outlay.	Execution. Original works. Grant.	Execution. Original works. Outlay.	Execution. Repairs. Grant.	Execution. Repairs. Outlay.	"Minor works," Revenue Department. Original works. Grant.	Original works. Outlay.	Repairs. Grant.	Repairs. Outlay.
	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
1. Rushikulya	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2. Ganjám	7,463	6,760	8,080	7,521	..	..	..	..	..	..	..	..	..	..
3. Vizagapatam	19,117	17,701	6,000	6,029	2,238	2,233	5,560	4,436	3,500	3,552	820	561	..	..
4. Gódávari Eastern	2,000	1,719	13,500	13,692	..	..	4,000	4,009	4,000	3,655	..	..	..	..
5. Do. Western	2,500	2,100	3,000	2,935	150	121	3,130	2,285	4,700	4,229	..	..	..	..
6. Kistna Eastern	3,000	2,682	9,000	9,129	..	..	..	..	..	..	..	..	..	..
7. Gudiváda	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8. Kistna Western	..	..	..	..	1,993	2,085	3,137	3,691	7,208	3,679	..	..	..	..
9. Nellore	62,763	62,809	23,000	22,937	..	..	..	..	..	..	..	2,657	..	110
10. Buckingham canal	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11. Cuddapah	23,900	24,401	22,500	22,651	..	..	..	..	..	52	..	..	5,571	5,735
12. Kurnool	4,578	3,813	58,000	45,775	..	..	3,000	3,353	5,000	4,669	..	..	10,000	10,994
13. Bellary—Bellary District	45,756	44,290	32,727	33,900	..	..	1,599	1,475	380	289	..	..	620	— 1,763
Anantapur	7,430	9,049	7,273	7,273	..	..	1,921	1,921	..	..	..	190	6,260	2,100
14. West Coast	..	..	1,400	1,295	..	..	..	..	..	..	..	..	..	..
15. Coimbatore	3,850	4,207	25,000	25,020	..	..	1,300	1,161	1,600	1,431	..	..	410	..
16. Salem	12,264	10,779	15,000	14,851	1,636	1,747	15,000	14,628	17,300	15,642	880	..	..	1,527
17. North Arcot	13,600	14,689	44,400	45,242	1,629	1,640	24,207	23,299	39,000	37,963	..	1,343	1,924	980
18. Chingleput	41,640	41,826	57,000	57,034	122	122	27,000	19,074	54,948	42,993	..	8,173	..	11,788
19. South Arcot	16,388	16,264	30,800	31,014	..	..	6,460	6,383	18,769	18,754	..	241	1,790	1,216
20. Tanjore	300	343	100	120	..	..	..	..	..	..	..	..	..	..
21. Negapatam	2,000	1,996	2,000	1,999	1,689	980	..	..	..	..	..	..	..	..
22. Trichinopoly	25,450	25,504	22,704	22,980	..	..	..	..	..	..	500	487	107	107
23. Madura	35,513	36,635	15,000	15,463	2,745	2,872	31,240	31,213	30,000	29,885	..	..	..	..
24. Tinnevelly	16,902	17,574	41,100	41,179	3,303	3,539	11,809	12,097	19,000	19,004	..	50	..	..
25. No. I Periyár	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26. ,, II ,, ...	1,700	1,433	..	..	..	..	..	..	..	..	..	..	..	..
27. Tank Restoration— Central office	..	..	..	..	1,780	1,847	..	..	..	..	..	..	..	..
28. Adjustment of old maintenance charges.	10,381	10,381	1,42,850	1,42,850	..	..	..	..	..	..	..	..	..	..
Total ..	3,58,495	3,56,955	5,80,434	5,70,889	17,285	17,186	1,39,303	1,29,025	2,05,405	1,85,797	2,200	13,702	26,682	32,794
Revenue Department ..	..	..	3,64,042	2,34,907	..	..	..	..	..	..	..	..	..	..
Total ..	3,58,495	3,56,955	9,44,476	8,05,796	17,285	17,186	1,39,303	1,29,025	2,05,405	1,85,797	2,200	13,702	26,682	32,794

A.—Statement showing by divisions the grants for and expenditure incurred on original works and repairs under Irrigation, Navigation and Agricultural works, &c.—*cont.*

Divisions.	Provincial, 43. Minor Works and Navigation—*cont.* Kistna upland projects. Grant.	Kistna upland projects. Outlay.	Agricultural works. Original works. Grant.	Agricultural works. Original works. Outlay.	Agricultural works. Repairs. Grant.	Agricultural works. Repairs. Outlay.	Local, 43. Minor Works and Navigation. Original works. Grant.	Original works. Outlay.	Repairs. Grant.	Repairs. Outlay.	Total. Grant.	Total. Outlay.
	30	31	32	33	34	35	36	37	38	39	40	41
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
1. Rushikulya	..	..	50	52	950	1,007	..	..	..	..	4,16,305	4,14,974
2. Ganjám	..	..	130	133	4,333	4,313	..	..	..	..	21,106	19,795
3. Vizagapatam	..	..	..	140	2,282	2,283	..	..	..	..	39,457	36,935
4. Gódávari Eastern	..	..	6,000	6,191	21,000	21,480	..	..	..	..	1,71,718	1,66,239
5. Do. Western	..	..	13,154	12,167	37,415	37,516	..	..	..	..	2,40,543	2,35,523
6. Kistna Eastern	..	..	450	156	12,500	13,785	..	..	..	..	1,41,481	1,41,748
7. Gudiváda	..	..	..	..	..	..	..	..	..	..	1,25,400	1,22,130
8. Kistna Western	6,160	5,965	..	..	13,000	14,006	..	..	..	..	2,84,804	2,78,285
9. Nellore	..	..	15,825	16,977	4,732	4,666	..	..	..	..	1,92,384	1,94,649
10. Buckingham canal	..	..	7,130	7,300	..	..	..	..	..	..	2,38,346	2,38,718
11. Cuddapah	..	..	..	180	6,000	6,250	..	..	..	..	1,12,971	1,13,839
12. Kurnool	..	..	..	..	..	..	..	..	..	..	2,11,704	1,62,956
13. Bellary—Bellary District	..	..	..	..	..	..	17,000	13,835	..	..	98,082	92,026
Anantapur	..	..	..	..	..	..	..	..	..	..	22,884	20,533
14. West Coast	..	..	..	..	..	..	..	..	..	..	1,400	1,295
15. Coimbatore	..	..	1,800	2,238	4,000	6,661	..	146	..	..	46,919	48,613
16. Salem	..	..	151	150	1,500	1,597	2,000	2,804	3,000	2,159	75,278	71,209
17. North Arcot	..	..	..	..	1,221	492	..	..	..	..	2,67,682	2,58,514
18. Chingleput	..	..	4,800	4,948	1,700	1,668	..	..	..	..	2,11,767	2,12,093
19. South Arcot	..	..	8,057	7,822	14,000	13,998	..	..	..	..	1,82,829	1,82,292
20. Tanjore	..	..	7,950	8,176	44,861	44,639	..	..	..	..	1,01,107	1,01,235
21. Negapatam	..	..	4,615	4,328	21,757	22,710	..	..	..	..	69,991	67,132
22. Trichinopoly	..	..	12,732	12,663	24,567	24,559	..	..	..	..	94,992	95,229
23. Madura	..	..	..	..	..	..	..	..	..	..	1,14,498	1,16,068
24. Tinnevelly	..	..	2,750	2,751	4,000	4,154	..	..	..	..	1,27,756	1,28,931
25. No. I Periyár	..	..	..	..	..	..	..	..	..	..	7,64,140	7,67,943
26. ,, II ,, ...	..	..	..	..	..	..	..	..	..	..	2,25,894	2,13,685
27. Tank Restoration— Central office	..	..	..	..	..	..	..	..	..	..	1,780	1,847
28. Adjustment of old maintenance charges.	..	..	..	..	..	..	..	..	..	..	..	..
Total ..	6,160	5,965	85,594	86,372	2,19,818	2,25,784	19,000	16,785	3,000	2,159	46,03,218	45,04,436
Revenue Department ..	..	..	..	..	..	..	..	..	..	..	3,64,042	2,34,907
Total ..	6,160	5,965	85,594	86,372	2,19,818	2,25,784	19,000	16,785	3,000	2,159	49,67,260	47,39,343

B.—Statement showing by systems the grants for and expenditure incurred on Irrigation, Navigation and Agricultural works during 1892–93.

—	Revised estimate for 1892–93.					Expenditure incurred in 1892–93.						
	Original works.	Repairs.	Establishment.	Tools and plant.	Total.	Original works.	Repairs.	Establishment.	Tools and plant.	Refunds of revenue.	Less receipts on capital expenditure.	Total.
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
IMPERIAL.												
35. Construction of Protective Irrigation Works.												
Rushikulya project	4,07,305	..	89,126	1,569	4,98,000	4,06,059	..	89,158	987	..	859	4,95,345
42. Major Works (Working Expenses).												
Gódávari delta system	37,362	2,56,200	2,07,444	44,500	5,45,506	36,851	2,51,619	2,07,578	44,913	45	..	5,41,006
Kistna do.	15,283	2,09,680	1,57,482	37,200	4,19,645	13,308	2,15,418	1,57,935	35,526	758	..	4,22,945
Pennéru anicut system	2,180	9,640	10,778	— 5	22,593	2,063	6,854	10,028	— 5	..	..	18,940
Sangam do.	5,165	21,116	17,182	323	43,776	4,724	23,507	17,624	269	..	..	46,124
Kurnool-Cuddapah canal	7,272	1,17,500	26,386	2,382	1,53,540	5,888	81,859	27,036	2,062	38	..	1,16,883
Barur tank project	2,000	2,390	1,490	..	5,880	820	2,406	1,160	..	..	..	4,386
Cauvery delta system	23,307	— 43,388	31,332	— 1,383	9,868	22,616	— 43,092	29,427	— 1,334	16	..	7,633
Srívaikuntam anicut system	3,540	8,292	8,301	9	20,142	3,541	8,058	8,146	— 78	..	..	19,667
Rushikulya project	..	8,000	1,890	160	10,050	..	7,856	1,807	..	..	..	9,663
Total ..	96,099	5,89,430	4,62,285	83,186	12,31,000	89,811	5,54,485	4,60,741	81,353	857	..	11,87,247
49. Capital Expenditure not charged to Revenue.												
Gódávari delta system	4,150	..	445	414	5,009	1,193	..	144	255	..	..	1,592
Kistna do.	2,55,274	..	54,828	12,000	3,22,102	2,42,483	..	52,900	13,724	..	7,461	3,01,646
Pennéru anicut system	56	..	13	..	69	56	..	13	..	..	..	69
Barur project	2,157	..	496	..	2,653	2 100	..	483	..	..	..	2,583
Sangam anicut project	18,264	..	3,522	— 2,540	19,246	17,636	..	3,609	— 2,624	..	..	18,621
Kurnool-Cuddapah canal	..	..	..	..	..	..	..	..	..	..	235	— 235
Periyár project	9,88,334	..	2,23,964	98,623	13,10,921	9,80,195	..	2,24,080	99,553	..	1,919	13,01,909
Total ..	12,68,235	..	2,83,268	1,08,497	16,60,000	12,43,663	..	2,81,229	1,10,908	..	9,615	16,26,185
Total, Imperial ..	17,71,639	5,89,430	8,34,679	1,93,252	33,89,000	17,39,533	5,54,485	8,31,128	1,93,248	857	10,474	33,08,777

B.—Statement showing by systems the grants for and expenditure incurred on Irrigation, Navigation and Agricultural works during 1892–93—*cont.*

—	Revised estimate for 1892–93.					Expenditure incurred in 1892–93.						
	Original works.	Repairs.	Establishment.	Tools and plant.	Total.	Original works.	Repairs.	Establishment.	Tools and plant.	Refunds of revenue.	Less receipts on capital expenditure.	Total.
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
PROVINCIAL.												
43. Minor Works and Navigation.												
Works for which Capital and Revenue Accounts are kept.												
Capital Account.												
Pálár anicut	15,481	..	3,561	..	19,042	11,675	..	2,685	..	..	..	14,360
Tirukkóyilúr anicut	7,500	..	1,725	..	9,225	7,500	..	1,725	..	..	..	9,225
Shatiatope do.	6,000	..	1,380	20	7,400	6,000	..	1,380	..	..	..	7,380
Ganjám-Gopalpur canal	300	..	..	..	300	294	..	..	..	..	..	294
Buckingham canal	1,47,567	..	33,941	1,800	1,83,308	1,47,705	..	33,969	1,592	..	..	1,83,266
Dondapad tank	15,000	..	3,450	75	18,525	15,775	..	3,628	..	..	..	19,403
Poiney anicut	3,390	..	780	..	4,170	3,076	..	708	..	..	..	3,784
Cheyáru do.	430	..	..	..	430	431	..	99	..	..	..	530
Patha-Cuddapah tank	20,000	..	4,209	881	25,090	20,171	..	4,549	..	..	..	24,720
Cumbum tank	1,400	..	322	..	1,722	1,322	..	304	..	..	..	1,626
Arkenkota channel	2,105	..	484	..	2,589	813	..	187	..	..	..	1,000
Sagiléru project	35,000	..	8,050	..	43,050	34,399	..	7,912	..	..	..	42,311
Total ..	2,54,173	..	57,902	2,776	3,14,851	2,49,161	..	57,146	1,592	..	..	3,07,899
Revenue Account.												
Pálár anicut	20,782	38,591	13,826	163	73,362	21,369	36,982	13,547	31	..	..	71,929
Polandorai anicut	3,971	12,942	3,915	— 1	20,827	3,948	12,942	3,894	— 2	..	..	20,782
Chembrambakam tank	— 483	— 1,100	— 359	— 109	— 2,051	— 483	— 1,248	— 404	— 109	..	..	— 2,244
Buckingham canal	3,649	80,000	28,939	{ 1,600 / 1,895 }	1,16,083	3,420	80,293	28,310	2,094	1,609	..	1,15,726
Madras Water-supply and Irrigation extension ..	— 2,800	8,100	2,419	— 10	7,709	— 2,800	8,102	2,248	— 10	..	..	7,540
Védáranniyam canal	..	5,500	1,415	10	6,925	..	3,142	830	..	11	..	3,983
Chilka lake canal	..	800	184	..	984	..	734	119	..	..	..	853
Maradur anicut	2,000	9,500	2,701	4	14,205	1,930	9,494	2,643	..	..	..	14,067
Lower Coleroon anicut	2,405	20,000	5,224	4	27,633	2,405	20,013	5,179	..	..	..	27,596
Shatiatope anicut	2,300	10,000	2,834	5	15,139	2,313	10,052	2,861	..	..	..	15,226
Vriddhachalam anicut	1,500	3,000	1,037	8	5,545	1,504	2,997	1,039	..	..	..	5,540
Mehamattur anicut	1,000	11,252	2,819	3	15,074	1,000	11,252	2,828	..	..	..	15,080
Tirukkóyilúr do.	1,574	6,709	1,950	..	10,233	1,553	6,709	1,983	..	..	..	10,245
Cumbum tank	— 46	5,000	1,139	..	6,093	— 46	5,329	1,215	3	..	..	6,501
Thadapally channel	360	2,340	621	..	3,321	162	2,390	592	..	..	..	3,144
Arkenkota do.	..	2,950	678	..	3,628	..	2,933	675	..	..	..	3,608
Kalingaroyen do.	354	850	327	15	1,546	423	1,029	372	..	..	..	1,824
Poiney anicut	10,000	7,000	3,920	..	20,920	6,790	6,413	3,071	..	..	..	16,274

Cheyáru do.	36,400	17,000	12,292	..	65,692	34,654	18,860	12,325	..	..	..	65,839
Ganjám-Gopalpur canal	..	..	..	..	..	..	40	9	..	..	..	42
Vallur anicut	..	1,200	276	..	1,476	..	1,245	286	..	..	..	1,531
Total ..	82,966	2,41,634	86,157	{ 1,600 1,987	} 4,14,344	78,142	2,39,702	83,622	2,007	1,620	..	4,05,093
Works for which neither Capital nor Revenue Accounts are kept.												
Old maintenance charges	10,381	1,42,850	2,09,070	1,868	3,64,169	10,381	1,42,850	2,09,070	1,868	..	..	3,64,169
Ordinary works, Public Works Department ..	3,48,114	4,37,584	1,81,973	13,853	9,81,524	3,46,574	4,28,039	1,77,841	11,553	111	..	9,64,118
Minor works, Revenue Department	2,200	3,90,724	6,642	434	4,00,000	13,702	2,67,701	10,694	697	..	..	2,92,794
Tank restoration investigation	17,235	..	47,652	850	65,787	17,186	..	46,807	934	..	..	64,927
" execution	1,39,303	2,05,405	79,284	5,169	4,29,161	1,29,025	1,85,797	72,409	4,722	..	..	3,91,953
Investigation of upland project	6,160	..	1,500	200	7,860	5,965	..	1,431	200	..	..	7,596
Investigating Vamsadhára project	..	..	..	..	..	..	..	..	2,245	..	..	2,245
Total ..	5,23,443	11,76,563	5,26,121	22,374	22,48,501	5,22,833	10,24,387	5,18,252	22,219	111	..	20,87,802
Agricultural works	85,594	2,19,818	71,384	4,508	3,81,304	86,372	2,25,784	71,323	4,439	530	..	3,88,448
Total, Provincial ..	9,46,176	16,38,015	7,41,564	{ 1,600 31,645	} 33,59,000	9,36,508	14,89,873	7,30,343	30,257	2,261	..	31,89,242
LOCAL.												
43. Minor Works and Navigation.												
Works for which neither Capital nor Revenue Accounts are kept	19,000	3,000	..	..	22,000	16,785	2,159	..	..	..	..	18,944
Grand total ..	27,36,815	22,30,415	15,76,243	2,26,497	67,70,000	26,92,826	20,46,517	15,61,471	2,23,505	3,118	10,474	65,16,963

Order—dated 21st June 1893, No. 564 I., Public Works.

The grants for 1892–93 have been on the whole fairly worked out. Though it is evident from the foregoing note by the Chief Engineer for Irrigation that the lapse of grant, viz., 3·7 per cent., will, when the final accounts are made up, be considerably reduced, the Government considers that Superintending Engineers should strive to secure in future a closer approximation of expenditure to grants.

2. Ordered that a copy of these Proceedings be forwarded to the Government of India, for information, with reference to its circular No. 21 (Public Works), dated 13th December 1392.

[Here enter No. 565 I.; dated 21st June 1893.]

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer, Public Works Department.
" the Chief Engineer for Irrigation.
" Superintending Engineers.
" the Superintendent of Works, No. I Periyár Division.
" the Revenue Department.
" the Examiner, Public Works Accounts.

Endorsement—dated 21st June 1893, No. 565 I., Public Works.

Forwarded.

(By Order.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 21st.

Recd. *Encl.*

G.O., 21st June 1893, Nos. 564, 565 I.

JUNE.

Expenditure on Irrigation, Navigation and Agricultural Works

Forwarding copy of Proceedings on the statements comparing the — incurred during 1892–93 with the final grants for the year.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following papers:—

From S. D. PEARS, Esq., Superintendent of Works, No. I Periyár Division, to the Chief Engineer, Public Works Department, dated Kodaikánal, 11th May 1893, No. 32 C.E.

In submitting an estimate, amounting to Rs. 8,000, for conservancy establishment required for Periyár and Thekady camps for 1893–94, I have the honour to request that you will be good enough to obtain the sanction of Government thereto at your early convenience. The actual expenditure on the establishment for 1892–93 was Rs. 8,056–2–10, but it is hoped that by the recent introduction of some further economy the present establishment will suffice for the current year.

From the same officer, dated Kodaikánal, 9th June 1893, No. 57 C.E.

In reply to your No. 229 D. of 25th May 1893, I have the honour to report as follows regarding the conservancy establishment at Periyár and Thekady.

During the working season the average populations are 3,730 at Periyár and 1,150 at Thekady; during the recess about 1,500 at Periyár and 1,000 at Thekady.

For the supervision of the lascars and scavengers, one maistry is required at each camp whom it has been the custom to call the "Sanitary Inspector" at Periyár and the "Sub-Sanitary Inspector" at Thekady. The reason for the latter name is not known to me, for the two men have nothing to do with each other and have precisely the same duties to perform, one in each camp.

The duties now performed by the Sanitary Inspector at Periyár were till August last divided between the head clerk and the apothecary, but with the yearly increasing size of the camp at Periyár it was found necessary to appoint a man for the purpose. Under the sanitary inspectors are 7 lascars, 4 at Periyár, 2 at Thekady and 1 at the small subsidiary Mulya Panjan camp, where the canal and road laborers are located with their maistries and an overseer. The duties of these lascars are to see that the coolies use the latrines and that the scavengers perform their duties in the latrines and streets. Of the scavengers there are 42, of whom 19 are employed at Periyár, 20 at Thekady, 2 at Mulya Panjan and 1 (during the working season only) at No. 1 dam where there is a small camp of boatmen, wood cutters, steam launch lascars, and the steam launch driver and fireman. I have not yet had an opportunity of going very carefully into the question of the scavengers, nor shall I be able to do so till work is resumed after the recess. It is possible that their numbers may be slightly reduced. I doubt if anything more than a slight reduction can beneficially be effected, as the latrines are numerous and scattered and the area of their operations is large; but I will give the matter careful attention on the earliest opportunity, as they form the largest item in the estimate under reference.

The midwife has been entertained only since August last, and her services have not yet come to be as largely employed as they should be and ought to be. The apothecary at Periyár reports, however, that her practice is steadily extending, and I would recommend that she should be given a further trial. The cooly lines are merely long rows of grass hovels with grass partitions, and it is most desirable, in the cause of decency as well as of health, that women should resort to the hospital as much as possible for delivery.

The two compounders—one at each camp—are unquestionably necessary. The number of patients treated at Periyár and Thekady respectively during the past year was 4,270 and 3,980. The apothecary at Periyár and the hospital assistant at Thekady have not only the treatment of these but have also the general supervision of the camps and latrines, and during their daily absence from hospital on this duty as well as at nights it is necessary that a compounder should be present in hospital to make up prescriptions for out-patients, to help in accident cases and to attend to the in-patients. This is especially necessary at Periyár where the mistake has been made of locating the apothecary's quarters at a considerable distance from the hospital. Absence of the apothecary from sickness or on leave has also to be provided for, and it has even happened that, owing to the sudden illness of one compounder and one apothecary during the absence on casual leave of the other, a single compounder has been in charge for some days of both camps.

For the foregoing reasons I beg that the estimate may be sanctioned as it stands. The only reductions in it that may be possible are, as explained above, the provision for scavengers and for the midwife. I will endeavour to effect these reductions if possible.

ORDER—dated 22nd June 1893, No. 566 I., Public Works.

The following estimate is sanctioned from the balance of the amount available for unforeseen works of the Periyár project, which will then be reduced to Rs. 16,475 :—

Capital Expenditure not charged to Revenue.
49. Irrigation.
Periyár Project.
I. Works.
(1) Head Works.
4. Buildings.

	RS.
Conservancy establishment required for 1893–94, estimate	8,000

2. This sanction is registered as No. 75 I. of 1893–94.

(True Extract.)

(Signed) J. HANNAN,
Ag. Joint Secy. to Govt., P.W.D.,
General, Buildings and Roads Branch.

To the Chief Engineer for Irrigation.
" Superintendent of Works, No. I Periyár Division.
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 22nd.

Recd. *Encl.*

G.O., 22nd June 1893, No. 566 I.

JUNE.

Conservancy Establishment

Estimate of Rs. 8,000 for the — required for Periyár and Thekady camps for 1893-94, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.

READ—the following paper :—

No. 916.

Report of progress of works in No. II Periyár division for the month of May 1893.

I to X Reach ($30\frac{1}{2}$ *miles*)—*Earthwork.*—In the first 10 reaches the excavation is practically completed except a few gaps in the 2nd and 3rd reaches which are now being closed.

Masonry.—Completed except that the claims of a few contractors for the following works have still to be settled :—

(i) Superpassage at 25 miles 4 furlongs.
(ii) Culvert at 26 miles 1 furlong.
(iii) Bridge Thoppulampatti at $26\frac{1}{2}$ miles.

As for the bridge and regulator at 27 miles 4 furlongs on the Alagar covil road, the shutters have to be fixed. This was delayed owing to the non-receipt of beams until the 2nd instant on which date the teak beams were received. It is hoped that the work will be completed before the end of this month.

XI Reach ($30\frac{1}{2}$ *to* 36 *miles*)—*Earthwork.*—Excavation of the channel between 0 to 154 chains is very nearly completed and banks are being dressed. Rock-cutting in the limits of Kidaripatty and excavation from 180 to 200 chains in progress.

Masonry.—The bridge at 30 miles 1 furlong is completed except approaches, and in the case of the undermentioned works the excavation of the foundations are done and materials collected to commence the masonry :—

(i) Culvert at 30 miles 3 furlongs,
(ii) Superpassage at 31 miles 6 furlongs,
(iii) Weir, Devimangalam tank, 32 miles,
(iv) Bridge from Melúr to Kidaripatty road, 32 miles 3 furlongs,
(v) Superpassage, sandy odai, 32 miles 5 furlongs, and
also the two culverts near Kidari hill.

Branch Channels.—In the 9th branch channel, which is the only branch channel under construction, the high embankments in the 4th and 5th miles are approaching completion. Sectioning half done. Excavation from the 6th to 9th miles and from 1st to 3rd miles completed.

Masonry.—Drops 1 to 10 in progress and nearly completed. Head sluices to Chittampatty and Kunnathoor offtakes commenced as well as road bridge, 7th mile. Arrangements made to commence the three offtakes this month.

Survey.—The whole of the 11th branch channel and the 12th down to Melúr have been marked out and are now being measured.

General.—Daily average of coolies about 1,000. The small number is accounted for by the very favorable season.

There were several showers during the month ; the average rainfall was 2·5 at the three stations Peranai, Mettupatty and Kallandry.

(Signed) G. P. CARLESS,
Ex. Engr., No. II Periyár division,

MADURA,
5th June 1893.

No. 96 P.R.

Copy submitted to the Chief Engineer, Public Works Department.

TRICHINOPOLY,
9th June 1893.

(Signed) W. HUGHES,
Suptg. Engr., VI Circle.

ORDER—dated 22nd June 1893, No. 567 I., Public Works.

Recorded and communicated to the Government of India.

[Here enter No. 568 I., dated 22nd June 1893.]

(True Extract.)

(Signed) J. HANNAN,
Ag. Joint Secy. to Govt., P.W.D.,
General, Buildings and Roads Branch.

To the Superintending Engineer, VI Circle.
,, Chief Engineer for Irrigation.
,, Revenue Department.

ENDORSEMENT—dated 22nd June 1893, No. 568 I., Public Works.

Copy of the above forwarded to the Government of India.

(By Order.)

(Signed) J. HANNAN,
Ag. Joint Secy. to Govt., P.W.D.,
General, Buildings and Roads Branch.

IRRIGATION.

Govt: of {1893} Madras.

PUBLIC WORKS.

Dated June, 22nd.

Recd. *Encl.*

G.O., 22nd June 1893, Nos. 567, 568 I.

JUNE.

Periyar Project

Forwarding copy of Proceedings recording the progress report of works in No. II Periyár division for the month of May 1893.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From Major A. W. SMART, R.E., Superintending Engineer, IV Circle, to the Chief Engineer for Irrigation, dated 25th May 1893, No. 129 E.I.

I have the honour to forward, for sanction of Government, plans and estimates, amounting to Rs. 3,100, for restoring the Padavedu tank in Polur taluk, North Arcot district.

2. This work was added to the list of tanks under the charge of this department in G.O., No. 219 I., of 4th March 1892.

3. This tank is situated about $1\frac{1}{2}$ miles north-west of Aliabad anicut and was breached in 1884 and has been so left since.

4. The tank has a catchment area of $3\frac{1}{2}$ square miles ; a weir of 130 feet long is allowed to discharge the maximum flood supply of 1,725 cubic feet per second with $2\frac{1}{2}$ feet head.

$$D = C \times M^{\frac{3}{4}} = 750 \sqrt[3]{3 \cdot 52}.$$

5. The estimates now submitted have been prepared as per your notes of inspection of July 1891 and provide for complete restoration of the tank.

6. If the tank is restored it will irrigate 200 acres which, at the rate of Rs. 4 per acre, will yield a revenue of Rs. 800 per annum.

ENCLOSURE.

REPORT to accompany the estimate for the Padavedu tank No. 473.

This is a tank situated about 2 miles to the north-west of the Aliabad anicut. There was a large breach made in the bund some years ago and the tank *was abandoned from that time.* Colonel Drake-Brockman, when he inspected the tank in 1891 as Superintending Engineer, IV Circle, directed the framing of an estimate for its complete restoration so that the lands that were once under the tank irrigated as nunjah may be reclaimed as nunjah again to the benefit of the villagers and to the Government.

Not abandoned. It is in charge of Public Works Department—*vide* G.O., No. 219 I., dated 4th March 1892.

The present estimate provides for raising the low portions of the bund, closing the big breach and revetting the deepest portion of the bund on both sides of the breach to above M.W.L. and for providing a pucka weir at the south end capable of discharging the full drainage due to the tank catchment basin of $3\frac{1}{2}$ square miles with a head of $2\frac{1}{2}$ feet above its crest.

As the big breach may become porous and leaky, provision is made to erect a wall of puddle across the breach as per sections attached.

If earth thrown up in 9″ layers watered and well rammed, puddle unnecessary.

The tank is now made capable of holding sufficient water for one crop for 200 acres If the seasons prove favorable and the tank fills twice during one year even double crop can be raised. The normal income to Government, supposing one crop is raised, will be, at Rs. 4 an acre on the average, about Rs. 800 a year, which is ample to pay for the capital laid out in restoring the tank.

The tank being near the hills where irrigation works of magnitude are very rare and consequently the people are very poor, the benefit to the people of the vicinity by the restoration of the tank will be incalculable.

The rates put in for the several descriptions of work are so arrived at in consideration of the famed feverishness of the locality where labour is very dear and materials except stones are to be got from a distance.

The two old sluices have their barrel in good order and they require only the front and rear portions to be remodelled for which lump sum provisions are made in the estimate.

All work to be carried out according to the standard specifications and also the latest circulars received from the Executive Engineer about them.

(Signed) C. R. CHINNASWAMI AIYANGAR,
Sub-divisional Officer.

21st April 1893.

No. 94 I.

Submitted to Government. The amount of the estimate forwarded by the Superintending Engineer has been reduced in this office from Rs. 3,100 to Rs. 2,850, the reduction being due to the conversion of the proposed weir into a calingulah and alteration of the slope of the revetment from $1\frac{1}{2}$ to 1 to 1 to 1.

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Chief Engineer for Irrigation.

OOTACAMUND,
12th June 1893.

To the Acting Secretary to Government,
Public Works Department, Irrigation Branch.

ORDER—dated 22nd June 1893, No. 569 I., Public Works.

The following estimate is sanctioned :—

Irrigation.
43. Minor Works and Navigation.
Minor Works for which neither Capital nor Revenue Accounts are kept, P.W.D.
North Arcot Division.
Original Works.

	RS.
Restoring the Padavedu tank No. 473 of the list of works appended to G.O., No. 407 I., dated 6th July 1887, estimate	2,850

2. This sanction is registered as No. 76 I. of 1893-94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, IV Circle,
with plans and estimates (8).
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 22nd.

Recd. *Encl.*

G.O., 22nd June 1893, No. 569 I.

JUNE.

Padavedu Tank

Estimate of Rs. 2,850 for restoring — in North Arcot division, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

No. 579.

REPORT to accompany plans and estimates for constructing outlet weirs to Pudukulam tank — one on the west end at 34-0-400 feet and the other on the east end at 34-1-540 feet, Eleventh reach, Main channel, Periyár project.

			RS.
Outlet weir on plan No. 58 as provided in the project estimate (*vide* Blue Book, page 38)			8,280
Amounts of revised estimates as per accompanying plans—			
		RS.	
No. 1		2,830	
„ 2		1,700	
			4,530
	Saving ...		3,750

The re-alignment of the Main channel in the Eleventh reach after running along the Kedari hills passes below the Kanjathinni tank and then through the Pudukulam tank (*vide* site survey accompanying).

2. These two tanks, though separate ones, had a continuous bund before the breach occurred on the east end of the Kanjathinni tank and the water partly surplused into the Pudukulam tank over a small spur lying between them and partly through the existing surplus channel on the west end of the tank.

3. This high ground is now proposed to be lowered to admit of the whole Kanjathinni surplus being let into the Pudukulam tank and to allow the combined surplus to be disposed of by means of the proposed weirs, the existing surplus channel being closed by putting up a bund across it.

4. As regards the details of the tank, the total combined drainage area of these two tanks amounts to 4 square miles, and this will give a maximum discharge of 1,512 cubic feet per second, by the usual formulæ $D = C\sqrt[3]{4^2}$ and C being equal to 600 and allowing $1\frac{1}{2}$ feet to run over the crest, the length of the weir will be 253 feet; of this length 153 feet to be built on the west and 100 feet on the east end of the Pudukulam tank. Two weirs are proposed as the ground will not admit of one long weir.

5. The saving of Rs. 3,750 effected by the revision of the estimate should be added to the provision for unforeseen works.

MADURA,
17th April 1893.

(Signed) G. P. CARLESS,
Ex. Engr., No. II Periyár Dn.

No. 88 P.R.

Copy, together with the plans and estimates, is submitted to the Chief Engineer, Public Works Department, for approval and sanction of Government.

2. The plans and estimates have been examined. The rates are considered reasonable.

TRICHINOPOLY,
6th June 1893.

(Signed) W. HUGHES,
Suptdg. Engr., VI Circle.

ORDER—dated 23rd June 1893, No. 570 I., Public Works.

The following revised estimates are sanctioned in lieu of the provision of Rs. 8,280 made for an outlet weir in the Eleventh reach of the Main channel in the sanctioned estimate for the Periyár project, the saving of Rs. 3,750 effected by the present estimates being added to the balance available for unforeseen works, which will then be increased to Rs. 20,225 :—

Capital Expenditure not charged to Revenue.
49. Irrigation.
Periyár Project.
I. Works.
2. Main Canals and Branches.
Main Channel, Eleventh Reach.
4. Falls and Weirs.

	RS.
Pudukulam tank, outlet weir No. 1	2,830
„ „ „ 2	1,700
Total ...	4,530

2. This sanction is registered as No. 77 I. of 1893-94.

(True Extract.)

(Signed) J. HANNAN,
Ag. Joint Secy. to Govt., P.W.D.,
General, Buildings and Roads Branch.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, VI Circle, with eight enclosures.
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 23rd.

Recd. *Encl.*

G.O., 23rd June 1893, No. 570 I.

JUNE.

Outlet Weirs

Revised estimates, aggregating Rs. 4,530, for constructing — to Pudukulam tank, Eleventh reach, Main channel, Periyár project, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From A. S. RUSSELL, Esq., Executive Engineer, Buckingham Canal, to the Superintending Engineer, II Circle, dated Madras, 13th April 1893, No. 167.

With reference to your endorsement No. 332 B.C., dated 1st February 1893, on memo. from the Chief Engineer for Irrigation No. II/5 B.C., of 25th January 1893, I have the honour to resubmit, for sanction, the undermentioned estimates in connection with the Covelong lock :—

(1) Estimate for constructing lock at Covelong north flood gate (section II and southern canal), amounting to Rs. 14,600.

(2) Estimate for additional gates and alterations to Sadras canal lock (Adyar river right bank, item 2, section II, southern canal), amounting to Rs. 8,950.

2. The necessity for the works is fully explained in the report accompanying.

3. The amount of the estimate can be met from the reserve at the disposal of Government.

ENCLOSURE.

REPORT to accompany estimate for constructing lock at Covelong north flood gate and for the necessary subsidiary works on the southern canal.

Amount of estimate—

	RS.
(1) Lock at Covelong	* 14,600
(2) Alterations to Sadras canal lock	8,950
Total ...	23,550

* Corrected in Superintending Engineer's office.

Necessity for lock.—Owing to the great loss of water during the hot season caused by evaporation and salt production in the Covelong backwater and to the periodical closings of the Covelong and Adyar bars, the water level in the 15 miles of canal from the Adyar river to the Covelong north flood gate annually falls very low during the hot weather and navigation yearly is only kept up with the greatest difficulty. From February to May inclusive the water level is usually so low that even with perpetual silt clearance in progress it is not possible to keep up navigation in this reach for boats of more than two feet draught. Great inconvenience is thus caused to the salt traffic from Covelong factory to Madras. A lock at Covelong north flood gate will hold up the water level and enable water to be retained up to high tide level and for long periods of the year to H.S.T. level and will isolate the canal from the Covelong backwater. The lock can be cheaply built, as the existing north flood gate at Covelong will be converted into a lock as shown in plans accompanying.

2. *Minor advantages of lock at Covelong.*—A lock at Covelong will also have the effect of making a very considerable reduction in the cost of annual silt clearance and in the cost of repairing wear and tear of banks. At present the silting in this reach, when the Covelong bar is open, is very great and the draught of tides is so considerable that during the low tides of February, March and April boats cannot ply during the lowest stages of the tide.

3. *Design of lock at Covelong.*—The estimate provides for utilising the existing north flood gate at Covelong so as to form a lock by addition of two lock gates to admit and retain high tide water as shown in plans accompanying.

4. *Necessity for additional gates at Sadras lock on the Adyar river and for alterations to lock.*—Since the Adyar bar will often, after a heavy north-east monsoon, remain open in February, March and April, during which months the tides range very low, high tides admitted and impounded by a lock at Covelong will, with the present arrangement of gates at the Sadras lock, course swiftly down the canal at the time of low tide, thereby damaging the banks; will force open the gates of the Sadras lock and will run out at the Adyar bar, leaving the water level in the 15 miles of canal between the Covelong and the Adyar very low at such times. It therefore becomes necessary to add at the Sadras lock another pair of gates facing towards the canal. Alterations to the Sadras lock in connection with these gates will be necessary and are shown in the plan accompanying.

5. The principal alterations to the Sadras lock are—

(1) Lowering the sill in order to allow the new gates to swing.
(2) Dismantling a portion of side walls so as to form recesses for new gates.
(3) Removing and rebuilding apron and revetment where necessary.

The present flood gate A (*vide* plans) facing towards the river will be retained to exclude river floods and the gate B corresponding to it will also be necessary to enable boats to cross the river when the water in the river is at a higher level than that in canal. This arrangement of double gates, as at the junction canal lock, is required, since, under the rules observed for many years with regard to cutting the Adyar bar, the water in the river is liable to stand for days at a higher level than in the canal and traffic would be cut off from Madras for days together were double gates not provided.

6. The estimate makes no provision for copper sheathing to any of the new gates, as it is believed such protection will not be required. The existing gates, which have been in existence for many years, show no signs of any serious damage, which is probably due to the fact that the Covelong and Adyar bars do not remain open for long and much fresh water is thus retained in canal; when the existing gates are removed and while the construction of the locks are in progress, the portions of the gates now under water will be carefully examined, and, if found necessary, provision will be made in a separate estimate for copper sheathing.

7. *Isolation of canal from Covelong backwater.*—When the lock at Covelong has been built, the reach of 15 miles from Adyar to Covelong will be entirely isolated from the backwater.

8. *M.W.L. within lock gates.*—The M.W.L. within the lock gates has been arrived at on the best data available and is believed to be ample. From the Adyar river to Papanchavady wharf, drainage water does not enter canal from either side. From Papanchavady to Covelong, the canal is embanked on the west and all drainage on that side falls into the Covelong backwater and ultimately finds an outlet by the Covelong bar. The west embankment is in need of restoration in parts and this work will be done from maintenance funds. The drainage on the east from Papanchavady to Covelong partly falls into the canal from a catchment area of 6 square miles. This area has been carefully calculated, the soil is sandy, and, except during the prevalence of cyclonic rainfall, the run-off is likely to be very inconsiderable. To discharge the drainage from this area the canal bank on the east at mile 13 will be levelled down for a length of 150 feet and to a height of 1 foot above H.S.T., while the ends of this escape will be revetted with stone. The cost of this escape will be inconsiderable and will be met from extensions and improvements.

If there is no serious objection I should imagine it would be better to lower the crest of the escape to H.S.T. level.

9. *Sill level of Covelong lock.*—The sill of lock is proposed to be on the same level as that of the flood gate already built at this place, viz., + 13·60 as shown in plan.

10. *Width of gates and length of chamber.*—In accordance with approved designs for other locks a clear width between gate quoins of 20 feet and a length between sills of 150 feet are allowed.

11. *Revetments to chamber.*—The sides of the chamber will be revetted with stone from the Little Mount, Guindy, at a slope of 1 to 1 from level of + 12·85. The bottom width of the chamber will be the same as that between the gate quoins, viz., 20 feet, and the revetment will abut at the toe against a toe wall and be carried up to full height of platform round the lock. Apron in bottom of chamber and apron and revetment in front and rear of the lock gates will also be provided with stone pitching at the levels and slopes given in plan. Both the revetment and apron will be provided with gravel backing and platforms on both sides of chamber and lock gates will be coated with gravel as detailed in the estimate.

12. *Design of lock gates.*—The design of the lock gates is similar to that for other lock gates already sanctioned and separate designs have not therefore been sent up with this estimate. The gates face towards the canal and will thus open to a rise in the Covelong backwater and will be closed to a fall.

13. *Site of lock.*—The canal on the north side of the existing flood gate is straight and the lock will have a straight approach as shown on site plan.

14. *Sub-soil*—Borings at the site of the Covelong lock show that ordinary sand, with about 3 per cent. of black clay, was found to extend to 7½ feet below theoretical bed level of canal and the time occupied in boring averaged four hours. The foundations have accordingly been designed with five feet wells below foundation flooring.

15. *Rates.*—The rates provided in the estimate are those at which the Covelong north flood gate was actually built.

16. *Temporary diversions.*—A temporary diversion to pass traffic during the construction of the Covelong lock is provided for through the west bank of the existing canal and extending into the Covelong backwater, while the diversion necessary to pass traffic during the alterations to Sadras canal lock is provided for on the east as shown in the site plan.

No. 97 B.C.

Forwarded to the Chief Engineer for Irrigation with reference to his No. II/5 B.C., dated 25th January 1893, for favour of sanction.

25th May 1893.

(Signed) A. A. G. MALET,
Offg. Suptdg. Engr., II Circle.

No. 96 I.

Submitted to Government with a recommendation that the estimates, aggregating Rs. 23,550, be sanctioned.

Madras,
17th June 1893.

(Signed) F. W. ASHPITEL,
for Chief Engineer for Irrigation.

To the Acting Secretary to Government,
Public Works Department, Irrigation Branch.

Order—dated 26th June 1893, No. 571 I., Public Works.

The following estimates are sanctioned from the balance of the amount reserved for unforeseen works of the Buckingham canal, which will then be reduced to Rs. 1,59,854 :—

Irrigation.
43. Minor Works and Navigation.
Minor Works for which Capital and Revenue Accounts are kept.
Capital Account.
Buckingham Canal.
I. Works.
2. Main Canals and Branches.
9. Navigation Works.

	RS.
1. Constructing a lock at Covelong	14,600
2. Altering Sadras canal lock	8,950
Total ...	23,550

2. This sanction is registered as No. 78 I. of 1893-94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, II Circle,
with plans and estimate (11).
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 26th.

Recd. *Encl.*

G.O., 26th June 1893, No. 571 I.

JUNE.

Locks

Estimates, aggregating Rs. 23,550, for constructing a lock at Covelong and altering that at the Sadras canal, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers:—

No. 596.

REPORT to accompany plan and estimate for constructing a superpassage in the ninth branch channel at 4 miles 7 furlongs and 310 feet, Periyár project.

	RS.
Amount of original estimate, viz.—	
One culvert on plan No. 68 sanctioned in Blue Book, page 42	2,740
Amount of revised estimate as per accompanying plan	1,700
Saving ...	1,040

The drainage water that comes from the Anamalai hills and its surroundings between the fourth and fifth miles of the ninth branch channel finds its way through several small streams, and, after crossing the channel, falls into a tank called Thathampatty, situated about $1\frac{1}{2}$ furlongs below the channel (*vide* accompanying survey).

2. As the fall of the ground here admits of these streams being diverted into one, the following arrangement is proposed.

3. To divert the stream marked B on survey into A and C and E into D and to construct a superpassage as per accompanying design on the mileage noted above, or at the point of bifurcation marked D; consequently no other extra masonry would be required.

4. As regards the other drainage streams marked F, G, and H on the survey, they form a separate project and designs and estimates are separately dealt with.

5. In regard to the details of the work the drainage area of the basin amounts to roughly half a square mile and the discharge for this would be, say, 400 cubic feet per second with a co-efficient of 600 and $D = CM^{\frac{2}{3}}$. A reference to the other details noted on the plan will give information regarding the waterway, &c., of both the super and sub passages.

6. The saving of Rs. 1,040 effected by the revision of the estimate should be added to the provision for unforeseen works.

7. The excavation for the foundation of the work has been put in hand and early sanction to the estimate is solicited.

MADURA,
3rd June 1893.

(Signed) G. P. CARLESS,
Ex. Engr., No. II Periyár Dn.

No. 101 P.R.

Copy, together with the plans and estimate, is submitted to the Chief Engineer, Public Works Department, for approval and sanction of Government.

2. The plan and estimate have been examined and the rates are considered reasonable.

TRICHINOPOLY,
10th June 1893.

(Signed) W. HUGHES,
Suptdg. Engr., VI Circle.

No. 893.

REPORT to accompany plan and estimate for constructing a superpassage and No. 10 fall combined at 5 miles 3 furlongs and 120 feet in the ninth branch channel, Periyár project.

	RS.
Amount of the original estimate for a culvert on plan No. 68	2,740
Amount of revised estimate for a fall No. 10, sanctioned in Superintending Engineer's register No. 69 of 1892–93	720
	3,460
Amount of the revised estimate now submitted ...	1,750
Saving ...	1,710

This work is proposed to be constructed in lieu of a culvert provided in the project estimate for Rs. 2,740 on plan No. 68, where a jungle stream from Anamalai hill crosses the branch channel at the above mileage.

2. The sub-passage is provided with a drop wall of 6 feet in front to serve the purpose of fall No. 10 which is some 100 feet above the work.

3. This arrangement will cancel the revised estimate of Rs. 720 for a fall sanctioned in the Superintending Engineer's register No. 69 of 1892–93 in lieu of the fall on plan No. 51 provided in the Blue Book for Rs. 860.

4. There are three more jungle streams which cross the branch channel on different places and they are to be diverted to the main one to avoid the cost of several cross drainage works.

5. The whole quantity of water thus to be conveyed across the channel will amount to nearly 400 cubic feet per second by formulæ $D = CM^{\frac{2}{3}}$.*

* C = 600.
M = ½ square mile.

MADURA,
2nd June 1893.

(Signed) G. P. CARLESS,
Ex. Engr., No. II Periyár Dn.

No. 106 P.R.

Copy, together with the plans and estimate, is submitted to the Chief Engineer, Public Works Department, for approval and sanction of Government.

2. The plans and estimate have been examined and the rates are considered reasonable.

TRICHINOPOLY,
12th June 1893.

(Signed) W. HUGHES,
Suptdg. Engr., VI Circle.

ORDER—dated 26th June 1893, No. 572 I., Public Works.

The following estimates, aggregating Rs. 3,450, are sanctioned in lieu of the sanctioned provision of Rs. 6,200, the saving of Rs. 2,750 effected by the present estimates being added to the balance available for unforeseen works of the Periyár project, which will then be increased to Rs. 22,975 :—

Capital Expenditure not charged to Revenue.
49. Irrigation.
Periyár Project.
3. Distributaries.
Other Cross Drainage Works.
Ninth Branch Channel.

	RS.
1. Superpassage at 4 miles 7 furlongs and 310 feet	1,700
2. Superpassage and No. 10 fall combined at 5 miles 3 furlongs and 120 feet	1,750
Total ...	3,450

2. This sanction is registered as No. 79 I. of 1893–94.

(True Extract.)

(Signed) J. HANNAN,
Ag. Joint Secy. to Govt., P.W.D.,
General, Buildings and Roads Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, VI Circle,
with plans and estimates (10).
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 26th.

Recd. *Encl.*

G.O., 26th June 1893, No. 572 I.

JUNE.

Periyar Project

Estimates, aggregating Rs. 3,450, for constructing superpassages in the ninth branch channel —, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following paper :—

From A. A. G. MALET, Esq., Officiating Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated 7th June 1893, No. 639 K.S.

In continuation of this office No. 260 K.S., dated 26th April 1893, I have the honour to forward, herewith, for your approval and sanction of Government, a comparative statement of works, amounting to Rs. 2,950, proposed to be built against the lump sums of Rs. 3,390, provided in G.O., No. 856 I., dated 17th October 1892, for excavating Medur channel of Masulipatam canal at 22 miles.

2. The estimated amounts of the works now proposed to be built are less than the amounts already sanctioned in lump in the Government order quoted above.

ORDER—dated 29th June 1893, No. 573 I., Public Works.

The following revised estimates, aggregating Rs. 2,950, are sanctioned in lieu of the provision of Rs. 3,390 made for the works in the estimate sanctioned in G.O., No. 856 I., dated 17th October 1892, the saving of Rs. 440 effected by the present estimates being reserved for unforeseen works of the Kistna delta system :—

Capital Expenditure not charged to Revenue.
49. Irrigation.
Kistna Delta System.
Eastern Section.
Eastern Division.
I. Works.
Masulipatam Canal.
3. Distributaries.
3. Works.

	RS.
Medur Channel.	
1. Drop No. 1 at 1 mile	435
2. " " 2 with bridge at 5 miles 1½ furlongs	710
3. " " 3 at 7 miles 6 furlongs	515
Kistnapuram Branch.	
4. Head sluice at 4 miles 5 furlongs	350
5. Road culvert at 2 miles 5 furlongs across Nidumole road	550
Gudapad Branch.	
6. Head sluice at 7 miles 4 furlongs	390
Total ...	2,950

2. This sanction is registered as No. 80 I. of 1893–94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle, with estimate (7).
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 29th.

Recd. *Encl.*

G.O., 29th June 1893, No. 573 I.

JUNE.

Medur Channel

Revised estimates, aggregating Rs. 2,950, for masonry works of — of the Masulipatam canal, Kistna delta system, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following paper:—

From A. A. G. MALET, Esq., Officiating Superintending Engineer, II Circle, to the Chief Engineer for Irrigation, dated 9th June 1893, No. 659 K.S.

With reference to your memo. No. II/55 K.S., dated 11th April 1893, I have the honour to forward, for your approval and sanction of Government, two estimates for constructing a curtain wall in rear of Sitanagaram head sluices and for driving piles in front of the sluices, amounting to Rs. 3,300 and Rs. 3,200, respectively, and to request that you will be so good as to obtain the sanction of Government from the balance available at their disposal for unforeseen works of the Kistna delta system.

2. The report, which accompanies the estimates, explains the necessity for the works.

Enclosure.

Report to accompany the estimate for "constructing a curtain wall in rear of Sitanagaram head sluices."

	RS.
Amount of estimate	3,300

The Sitanagaram head sluices, which are at the head of Kistna western delta, have been a source of some anxiety to the different engineers who have been in charge from time to time for some years past. The sluices are very badly cracked and from a careful examination of these cracks each year it has been proved that the cracks are extending gradually and it has become necessary to do something to ensure the stability of the sluices. The instability of the sluices is probably due to the slight shifting of the soil round the wells on which the sluices are built, and, with the object of preventing any further shifting, the Chief Engineer ordered the construction of a curtain wall to be built across the western main canal as close up to the sluices as practicable, the foundations of the wall being taken down on to firm soil. The estimate has therefore been prepared in accordance with above order.

The centre portion of the wall for a length of 121 feet will be carried on 16 wells, outside dimensions 7′ × 6′, inside 4′ × 3′; the wells being rectangular will be carried down to hard clay or as far as they can be sunk and will be filled with concrete; the tops of the wells will be 2 feet below the floor of the head sluices and on the top will be built a wall 2′ × 2′.

The remainder of the wall of a length of 89 feet on either side of the central portion will be built on concrete laid in open foundations taken down to a level 6 feet below the head sluice floor or to such depth as may be found necessary.

The wall built on the open foundations will be 3 feet thick at 4 feet depth reducing to 2 feet at level of top of wells and above this 2′ × 2′.

This work will be supplemented with sheet piling driven in front of the head sluices, for which a separate estimate is submitted.

The work has been put in hand in anticipation of sanction by the order of Chief Engineer.

22nd May 1893.

(Signed) C. A. SMITH,
Ex. Engr., Kistna Eastern Division.

ORDER—dated 30th June 1893, No. 580 I., Public Works.

The following estimates are sanctioned from the saving anticipated in the provision made for earthwork of the Eastern Bank canal in the statement printed in Proceedings of the Madras Government No. 577 I., dated 1st October 1888 :—

Capital Expenditure not charged to Revenue.
49. Irrigation.
Kistna Delta System.
Eastern Section.
I. Works.
(1) Head Works.
3. Works.

	RS.
1. Constructing a curtain wall in rear of Sitanagaram head sluices ...	3,300
2. Driving piles in front of the sluices	3,200
Total ...	6,500

2. This sanction is registered as No. 81 I. of 1893-94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Superintending Engineer, II Circle, with estimates (2).
„ Examiner, Public Works Accounts.
„ Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 30th.

Recd. *Encl.*

G.O., 30th June 1893, No. 580 I.

JUNE.

Curtain Wall

Estimates, aggregating Rs. 6,500, for constructing a — in rear of Sitanagaram head sluices and for driving piles in front of the sluices, Kistna delta system, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following papers:—

From S. D. PEARS, Esq., Superintendent of Works, No. I Periyár Division, to the Chief Engineer, Public Works Department, dated Kodaikánal, 2nd June 1893, No. 49 C.E.

I have the honour to forward, herewith, the completion report for the new rest-house at Periyár with explanation for the excesses in part F, and to request that you will be good enough to obtain the sanction of Government to the same.

Office-note to the Examiner, Public Works Accounts, dated 12th June 1893, No. 2312 C.
„ from „ „ „ 20th „ „ „ 2222 C.

From S. D. PEARS, Esq., Superintendent of Works, No. I Periyár Division, to the Chief Engineer, Public Works Department, dated Kodaikánal, 8th June 1893, No. 55 C.E.

I have the honour to forward, herewith, the completion report for conservancy of camps for 1892–93, with explanation for differences, and to request that the sanction of Government may be obtained to the net excess of Rs. 1,372.

Office-note to the Examiner, Public Works Accounts, dated 16th June 1893, No. 2359 C.
„ from „ „ „ 20th „ „ „ 2220 C.

Order—dated 30th June 1893, No 581 I., Public Works.

The Examiner of Public Works Accounts is authorised to pass the expenditure incurred on the two works referred to, the excess outlay of Rs. 2,514 being met from the balance of the amount reserved for unforeseen works of the Periyár project, which will then be reduced to Rs. 20,461.

2. This sanction is registered as No. 82 I. of 1893–94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
„ Superintendent of Works, No. I Periyár Division, with two enclosures.
„ Examiner, Public Works Accounts.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 33th.

Recd. *Encl.*

G.O., 30th June 1893, No. 581 I.

JUNE.

Excess Expenditure

The Examiner authorised to pass the — of Rs. 2,514 incurred on the conservancy of camps for 1892–93 and on the new rest-house, Periyár No. I division.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

Read—the following papers:—

From the Superintending Engineer, I Circle, dated 9th February 1893, No. 1128 G.N.
To " " " " 24th March " " 24 G.N.

From G. D. WYBROW, Esq., Superintending Engineer, I Circle, to the Chief Engineer for Irrigation, dated Dowlaishweram, 4th June 1893, No. 237 G.N.

In reference to your memo. No. $\frac{I}{24}$ G.N., dated 24th March 1893, I have the honour to retransmit, herewith, the plan and estimate for cattle ramps on Rushikulya canal duly revised with reference to your instructions.

2. The estimate for the first five cattle ramps has been reduced by a sum of Rs. 410 and the Executive Engineer states that the rates for the remainder are not susceptible of reduction.

3. I beg to state that gravelling will be necessary, as the soil is generally of the red gravel mixed with white clay, which when dry is hard enough but when in contact with water becomes slush.

4. The Executive Engineer reports that the high rate will not be paid if unnecessary; but this can only be ascertained during the execution of the work, as the hardness depends chiefly on the weather.

5. The quantity of earthwork and rate for ramp at $46\frac{1}{4}$ mile are now given.

Order—dated 30th June 1893, No. 582 I., Public Works.

The following estimate is sanctioned from the balance of the amount reserved for unforeseen works of the Rushikulya project, which will then be reduced to Rs. 35,834:—

Famine Relief and Insurance.
35. Protective Irrigation Works.
Rushikulya Project.
Rushikulya Section.
I. Works.
Rushikulya Canal.
2. Main Canals and Branches.
7. Bridges.

	RS.
Constructing cattle ramps, estimate	7,150

2. This sanction is registered as No. 83 I. of 1893-94.

(True Extract.)

(Signed) R. R. E. DRAKE-BROCKMAN, Lt.-Col., R.E.,
Ag. Secretary to Govt., P.W.D.

To the Chief Engineer for Irrigation.
" Superintending Engineer, I Circle, with estimates (4).
" Examiner, Public Works Accounts.
" Revenue Department.

IRRIGATION.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated June, 30th.

Recd. *Encl.*

G.O., 30th June 1893, No. 582 I.

JUNE.

Cattle Ramps

Estimate of Rs. 7,150 for — on Rushikulya canal, sanctioned.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

TABULAR STATEMENT OF MISCELLANEOUS PROCEEDINGS AND MATTERS OF ROUTINE,

IRRIGATION,

FOR THE MONTH OF JUNE 1893.

Subjects.	Number and Date of Order.	Numbers and Dates of previous Orders.
Erratum—in the final issue of the Major works budget estimates for 1893–94 appended to G.O., No. 375 I., dated 29th April 1893.	1st June 1893, No. 482 I.	......
Statement of objectionable items.—Orders on the — in the accounts of Executive Engineers remaining unremedied to end of February 1893, II Circle.	1st do. do. No. 485 I.	24th Feb. 1892, No. 190 I. 7th Mar. 1893, No. 219 I.
Petition.—Proceedings, Revenue Department, recording Proceedings in Public Works Department on — from Ramapuram, &c., villages in Kistna district regarding the embanking of the Budaméru, recorded.	2nd do. do. No. 489 I.	8th May 1893, No. 418 I.
Land.—Notification for the acquisition of — required for diversion of Periyár 9th branch channel, Periyár Project, ordered to be published in the *Fort St. George Gazette*.	5th do. do. No. 492 I.	......
Damming the Tambraparni near Papanasam.—Proceedings, Revenue Department, recording resolution of the Board of Revenue deciding that the question of — need not be re-opened at present, communicated to the Superintending Engineer, VI Circle, for information.	8th do. do. No. 502 I.	3st Mar. 1875, No. 848. 21st Nov. 1881, No. 1766. 8th Oct. 1884, No. 905 I.
Statement of objectionable items.—Orders on the — in the accounts of Executive Engineers remaining unremedied to end of March 1893, IV Circle.	8th do. do. No. 504 I.	17th Dec. 1892, No. 1070 I. 24th Feb. 1893, No. 192 I. 16th Feb. 1893, No. 144 I. 24th Jan. 1893, No. 71 I. 7th Mar. 1893, No. 218 I.
Statement of objectionable items.—Orders on the — in the accounts of Executive Engineers remaining under appropriation, I Circle.	8th do. do. No. 505 I.	15th Dec. 1892, No. 1062 I. 23rd Feb. 1893, No. 182 I.

Subjects.	Number and Date of Order.	Numbers and Dates of previous Orders.
Sanctions under "Revenue Account."—Letter from Government of India declining to raise the limit of —, communicated to the Chief Engineer for Irrigation.	10th June 1893, No. 508 I.	3rd Feb. 1892, No. 89 I. 16th Jan. 1893, No. 43 I. 22nd March 1893, No. 248 I. 14th April 1893, Nos. 341–42 I.
Land.—Notification for the acquisition of certain — required for the byewash of Mudaliar Kalam tank in Vellampatti village, ordered to be published in the *Fort St. George Gazette.*	10th do. do. No. 514 I.	......
Land.—Notification for the acquisition of — required for a parallel channel from Pedapudi channel sluice above Mukkamala lock, Gódávari delta system, ordered to be published in the *Fort St. George Gazette.*	10th do. do. No. 515 I.	......
Land.—Notification for the acquisition of — required for Rachinnayapalli channel, Cuddapah district, ordered to be published in the *Fort St. George Gazette.*	10th do. do. No. 516 I.	......
Land.—Notification for the acquisition of — required for cutting a branch channel from No. 4 sluice channel of Paliamcotta tank, Pelandorai anicut system, South Arcot district, ordered to be published in the *Fort St. George Gazette.*	10th do. do. No. 517 I.	......
Land.—Notification for the acquisition of — required in connection with Pallarnatham tank, Madura district, ordered to be published in the *Fort St. George Gazette.*	10th do. do. No. 518 I.	......
Errata—in para. 1 of G.O., No. 331 I., dated 13th April 1893.	12th do. do. No. 522 I.	......
Periyár Project.—E form progress reports of Nos. I and II Periyár Divisions for April 1893 ordered to be forwarded to the Government of India.	12th do. do. No. 523 I.	......
Forwarded	12th do. do. No. 524 I.	......
Statement of objectionable items.—Orders on the — in the accounts of Executive Engineers remaining unremedied to end of March 1893, Periyár Project.	12th do. do. No. 525 I.	20th May 1893, No. 459 I.
Statement of objectionable items.—Orders on the — in the accounts of Executive Engineer remaining unremedied to end of March 1893, III Circle.	12th do. do. No. 526 I.	26th Oct. 1892, No. 876 I. 22nd Feb. 1893, No. 170 I.
Land.—Notification for the acquisition of — required for the travellers' bungalow and line quarries at Kuruvanuth, Periyakulam taluk, in connection with the head works of the Periyár Project, ordered to be published in the *Fort St. George Gazette.*	15th do. do. No. 529 I.	15th June 1893, No. 529 I.

Subjects.	Number and Date of Order.	Numbers and Dates of previous Orders.
Land. — Notification for the acquisition of — in Kallani village for giving it in exchange for inam lands taken up for the Periyár 4th branch channel, ordered to be published in the *Fort St. George Gazette.*	15th June 1893, No. 530 I.	......
Land. — Notification for the acquisition of — in Periyar Elandakulam village for giving it in exchange for inam lands already taken up for the Periyár 3rd branch channel, ordered to be published in the *Fort St. George Gazette.*	15th do. do. No. 531 I.	......
Statement of objectionable items.—Orders on the — in the accounts of Executive Engineers remaining unremedied for period ending 31st March 1893, II Circle.	15th do. do. No. 532 I.	24th Jan. 1893, No. 70 I. 9th Jan. 1893, No. 10 I. 22nd Feb. 1893, No. 172 I. 7th March 1893, No. 217 I.
Statement of objectionable items.—Orders on the — in the accounts of Executive Engineers remaining unremedied to end of March 1893, VI Circle.	15th do. do. No. 533 I.	20th Aug. 1892, No. 700 I.
Statement of objectionable items.—Orders in the — in the accounts of Executive Engineers remaining unremedied to end of March 1893, V Circle.	15th do. do. No. 534 I.	8th March 1893, No. 220 I.
Land.—Notification for the acquisition of — required for excavating Peddapadu drain, Kistna delta system, ordered to be published in the *Fort St. George Gazette.*	17th do. do. No. 538 I.	2nd June 1888, No. 314 I.
Land.—Notification for the acquisition of — required for extending Muttenucodu channel, Gódávari district, ordered to be published in the *Fort St. George Gazette.*	17th do. do. No. 540 I.	......
Land.—Notification for the acquisition of — required for repairing Rayakuduru drain, Gódávari district, ordered to be published in the *Fort St. George Gazette.*	17th do. do. No. 541 I.	......
Land. — Notification for the acquisition of — required for an irrigation channel in Ambikapuram village, South Arcot district, ordered to be published in the *Fort St. George Gazette.*	17th do. do. No. 542 I.	......
Land.—Notification for the acquisition of — required for Veeravalli channel, Kistna delta system, ordered to be published in the *Fort St. George Gazette.*	17th do. do. No. 543 I.	......
Administration report of irrigation works in Madras during 1891-92.—Proceedings of the Board of Revenue communicating Government Orders on the Government of India review of the — and on the revenue statistics of irrigation works for the year, communicated to the Chief Engineer for Irrigation.	17th do. do. No. 544 I.	13th April 1893, No. 332 I.

Subjects.	Number and Date of Order.	Numbers and Dates of previous Orders.
Land.—Notification for the acquisition of — required for raising Pasaralapudi channel left bank, Gódávari district, ordered to be published in the *Fort St. George Gazette.*	17th June 1893, No. 545 I.	......
Land.—Notification for the acquisition of — required for repairing Mattaparru channel, Gódávari district, ordered to be published in the *Fort St. George Gazette.*	17th do. do. No. 546 I.	......
Land.—Notification for the acquisition of — required for repairing Namudur drain, Gódávari district, ordered to be published in the *Fort St. George Gazette.*	17th do. do. No. 547 I.	......
Land.—Notification for the acquisition of — required for distributary No. 4 from 13th mile, Rushikulya canal, ordered to be published in the *Fort St. George Gazette.*	17th do. do. No 548 I.	......
Land.—Notification for the acquisition of — required for diversion of canal bank at Pallamkuru, 46th mile, Bank canal, Gódávari district, ordered to be published in the *Fort St. George Gazette.*	17th do. do. No. 552 I.	......
Land.—Notification for the acquisition of — for stacking silt for Vadavur river, Trichinopoly district, ordered to be published in the *Fort St. George Gazette.*	17th do do. No. 553 I.	......
Land.—Notification for the acquisition of — in Mela Gudalur village required for brick-making for use of the Periyár project, ordered to be published in the *Fort St. George Gazette.*	20th do. do. No. 560 I.	23rd Jan. 1888, No. 52 I.
Suit.—Ordered that a copy of the judgment of the — filed by the Zemindar of Nuzvid regarding Kesarapalli sluice, Kistna Eastern division, be awaited.	20th do. do. No. 562 I.	3rd Jan. 1893, No 2 I.
Land.—Notification for the acquisition of — required for the diversion of Komaravolu ava channel, Vizagapatam district, ordered to be published in the *Fort St. George Gazette.*	20th do. do. No. 563 I.	......
Periyár Project.—E Form progress reports of Nos. I and II Periyár divisions for May 1893, ordered to be forwarded to the Government of India.	29th do. do. No. 574 I.	......
Forwarded	29th do. do. No. 575 I.	......
Revenue report of irrigation works in Sind.—Review of the — for 1891–92, communicated to the Chief Engineer for Irrigation.	30th do. do. No. 576 I.	......
Land.—Notification for the acquisition of — required for improving and widening Kalidindikodu turned into a drain, Kistna delta system, ordered to be published in the *Fort St. George Gazette.*	30th do. do. No. 577 I.	......
Land.—Notification for the acquisition of — for the extension of the right side channel of Gudiváda, Kistna delta system, Eastern section, ordered to be published in the *Fort St. George Gazette.*	30th do. do. No. 578 I.	......
Land.—Notification for the acquisition of — for the right side channel of Dosapad channel, Kistna delta system, Eastern section, ordered to be published in the *Fort St. George Gazette.*	30th do. do. No. 579 I.	......